User Guide
Version 3

CD-ROM CONTROL SOFTWARE

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Chapter 1

Introduction

1.1 About AsimCDFS 3

Welcome to AsimCDFS version 3, a total CD-ROM control solution for the Amiga family of computers. The AsimCDFS package consists of a high-performance file system and other support programs to further control your CD-ROM drive.

The AsimCDFS file system accepts most standard AmigaDOS commands that function with hard drives. In fact, you can visualize your CD-ROM drive as a large, write-protected hard drive. Commands such as `cd CD0:`, `dir CD0:`, etc, all work as expected. Alternatively, you can access the files via directory programs such as Directory Opus or even through the Workbench.

Playback of audio CDs is achieved through AsimTunes — an Intuition-based program providing Play, Pause, and Stop commands with advanced librarian functions. Transparent access to the 16-bit digital data on standard audio CDs is provided via AsimCDFS.

Transparent access to Kodak PhotoCDs and Corel ProPhoto discs are provided directly within the AsimCDFS file system. These images are converted to 24-bit IFF colour image files. CDTV and CD^{32} emulation modules are also included with AsimCDFS allowing access to the large number of titles available for these platforms. Most of the programs included have ARexx command sets incorporated into them for maximum flexibility.

In this package you will find: this manual, a master disk, a FishMarket CD-ROM disc and a registration card.

1.2 What is a File System?

Data is written to a storage media in a precise manner. With Amiga hard drives, this data-layout is called FastFileSystem, while Amiga floppy disks use the OldFileSystem.

Most computers have support for a single data-layout format hard-coded in the DOS. Adding alternative formats usually involves a tedious process of patching system calls.

With the Amiga, however, there exists a type of program called a file system, which provides the translation between a data-layout format and what AmigaDOS expects. In extremely simple terms, it is the job of a file system to:

- accept commands from AmigaDOS, such as open file, read x bytes, and so on;
- retrieve the necessary information off the disk;
- provide translation between the data-layout format on the disk and what AmigaDOS expects; and,
- send the requested information to AmigaDOS.

This is the job of the AsimCDFS file system.

1.3 System Requirements

AsimCDFS requires the following to operate:

- either a Commodore Amiga, CDTV or CD^{32} equipped with a floppy drive and keyboard;
- AmigaDOS 2.0 or greater;
- any of the 68000, 68010, 68020, 68030, or 68040 processors;
- a CD-ROM drive. If your particular drive is supported by AsimCDFS (see *Chapter 11 - Hardware and Software Compatibility*), all features of AsimCDFS should work properly. If an unsupported drive is used, limited success may be had, though audio and PhotoCD functions may not work;
- at least 512K of memory, though more is extremely desirable for use as buffers. [As CD-ROMs are slower than hard drives, buffering is an excellent way to obtain extra speed and efficiency]; and,
- any ISO 9660, High Sierra or HFS formatted CD-ROM discs.

1.4 Backing-Up the AsimCDFS Master Disk

It is always advisable to make a backup of your master disk. Since AsimCDFS is not copy-protected, the Commodore `diskcopy` utility will suffice for this purpose. If you are unfamiliar with diskcopy, consult the AmigaDOS manual for further instructions.

By not installing a copy-protection method on the master disk, we are relying on your honesty to curb piracy. We ask that you spread the word about AsimCDFS, not the disk!

1.5 Installation

For a painless installation procedure, AsimCDFS utilizes the standard Commodore Installer utility. In brief, the installation procedure will:

- copy *AsimCDFS* to the `1:` directory;
- copy *AsimTunes, DiscChanger, AsimCDFS_Prefs, CDTV_Prefs, CD^{32}_Prefs* and *SimBoot* to the supplied destination directory;
- copy *asimcdfs.device, cdtv.device, cd.device, bookmark.device* and *cardmark.device* to the *devs:* directory;
- copy *playerprefs.library, nonvolatile.library* and *lowlevel.library* to the *libs:* directory;
- add an assign to *AsimCDFS_Buffer* and *AsimCDFS*;
- if required, add a *mount* command; and,
- create a mountlist file — under AmigaDOS 2.0, the file will be placed in the `devs:` directory, while under AmigaDOS 2.1 and above, the file is placed in the *SYS:Storage/DOSDrivers* directory.

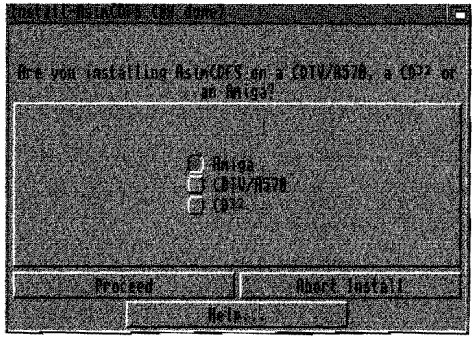
If you have an Amiga with a SCSI or ATAPI CD-ROM drive, you will need to know the following to successfully complete your installation:

- the name of the SCSI or ATAPI device. For example, the Commodore 2091 has a name of *scsi.device*, while our ATAPI driver is called *asim_ide.device*. See *Chapter 11.3 - SCSI and IDE Controller Cards* for more information on device names; and,
- the SCSI or ATAPI unit number of your CD-ROM drive. This will be a numerical value between 0 and 7 for SCSI units or between 0 and 1 for ATAPI units, and is usually set on your CD-ROM drive via dip switches or jumpers.

If you have a CDTV or CD^{32}, the above information is not needed. Otherwise, you can use the program SCSI Inquire to scan your system for appropriate devices and units. Consult *Chapter 10 - Using SCSI Inquire* for more information on this program.

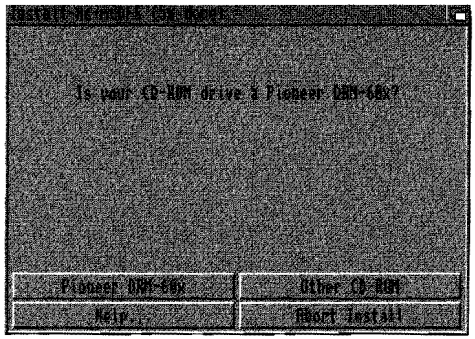
To begin the installation procedure, merely double click on the *Install-AsimCDFS* icon. A few questions will be asked of you:

Question #1: Are you installing AsimCDFS on a CDTV/A570, a CD^{32} or an Amiga?



If you are installing AsimCDFS on an Amiga equipped with a SCSI or ATAPI CD-ROM drive, choose Amiga. If you will be installing AsimCDFS on a CDTV or an Amiga with a A570, choose CDTV/A570. Otherwise, you will be installing AsimCDFS on a CD^{32}.

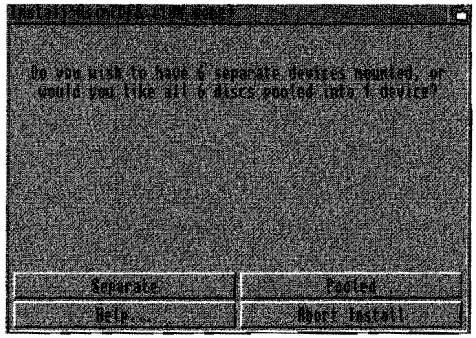
Question #2a: Is your CD-ROM drive a Pioneer DRM-60x?



If your CD-ROM drive is a Pioneer DRM-60x, then select DRM-60x, otherwise select Other CD-ROM.

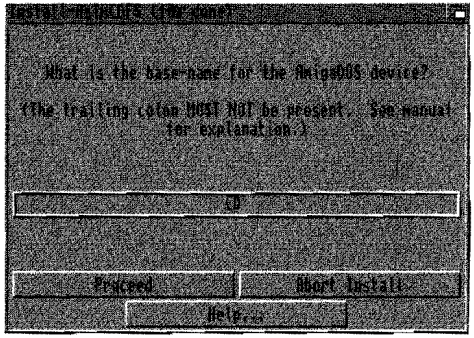
If you responded DRM-60x to the above question:

Question #2b: Do you wish to have 6 separate devices mounted, or would you like all 6 discs pooled into 1 device?



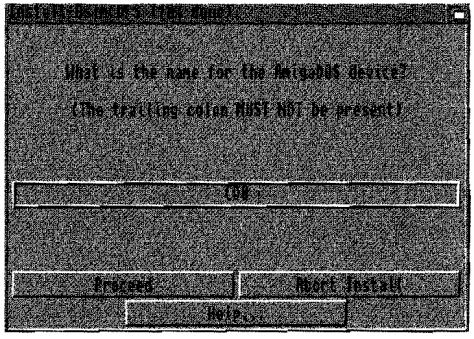
If you wish to have access to all 6 discs simultaneously, then select Separate, otherwise select Pooled — in the latter case, you can switch between the discs with DiscChanger.

If you responded DRM-60x and you wish separate devices:
Question #3a: What is the base-name for the AmigaDOS device?



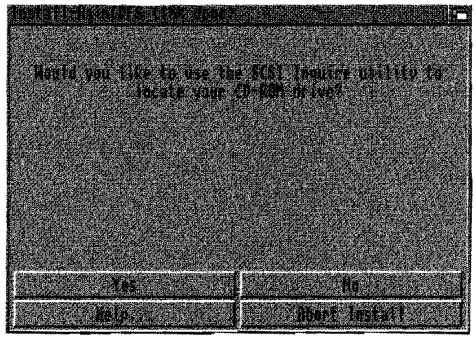
The default will be CD — meaning that devices CD0, CD1, CD2, CD3, CD4 and CD5 will be mounted representing discs 1 through 6. This can be changed to any legal base name.

Otherwise, if you do *not* have a Pioneer DRM-60x or if you do have a Pioneer DRM-60x and you want pooled mode:
Question #3b: What is the name for the AmigaDOS device?



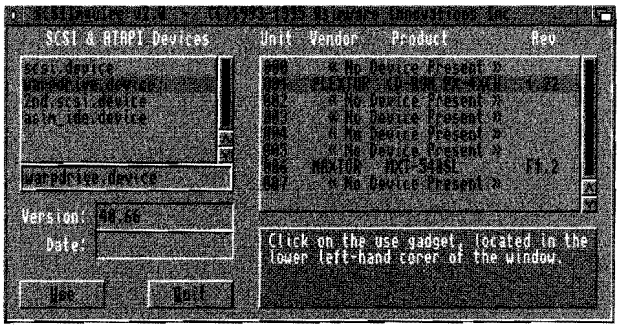
The response defaults to CD0 for Amiga users, or CD1 for CDTV, A570 and CD^{32} users. You may insert any valid AmigaDOS device name, if you so choose. Be sure that you choose a unique name, however, as the mount will fail if an identical device exists.

Question #4: Would you like to use the SCSI Inquire utility to locate your CD-ROM drive?



The SCSI Inquire utility will scan your system for suitable SCSI or ATAPI devices and display a listing of all units connected to the device. Your CD-ROM drive must be powered-on and correctly connected for it to be acknowledged by this utility. Consult Chapter 10 for detailed information.

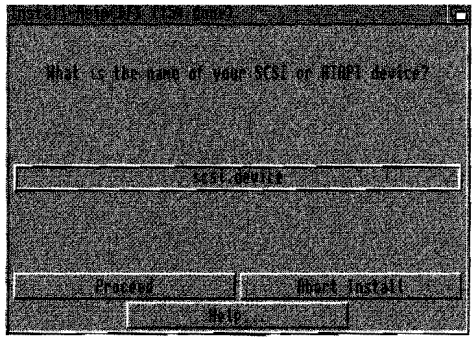
The SCSI Inquire interface will resemble the following:



In the coloured area in the bottom right hand corner of the window, directions will be printed. In brief, they are:

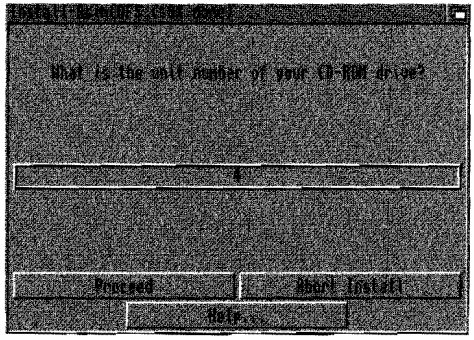
- select the SCSI or ATAPI device from the list located in the upper left corner under *SCSI & ATAPI devices;*
- select the CD-ROM drive from the list of devices that will be displayed on the right-hand side of the window;
- select the *Use* gadget.

Question #5: What is the name of your SCSI or ATAPI device?



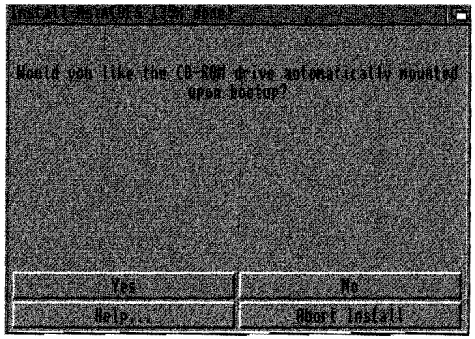
If you successfully ran the SCSI Inquire program, this question will default to the correct device name. Otherwise, you must enter the name of the SCSI or ATAPI device to which your CD-ROM drive will be connected. Consult *Chapter 11 - Hardware and Software Compatibility* for more information on determining the correct device name.

Question #6: What is the unit number of your CD-ROM drive?



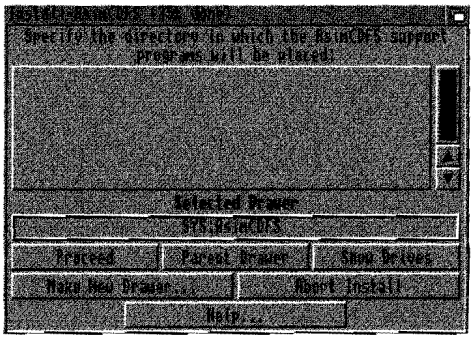
If you successfully ran the SCSI Inquire program, this question will default to the correct unit number. Otherwise, you must enter the unit number of your CD-ROM drive. Consult your CD-ROM drive manual for more information on determining and setting the unit number.

Question #7: Would you like the CD-ROM drive automatically mounted upon bootup?



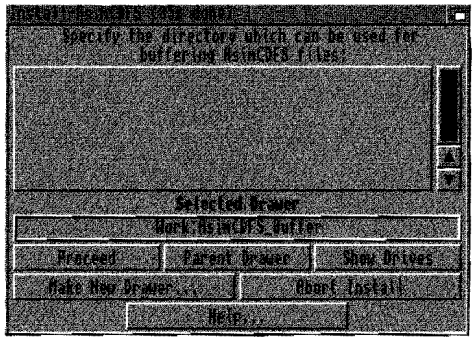
If you want the CD-ROM drive to be automatically mounted, then enter Yes; otherwise, enter No and consult *Chapter 2 - Using AsimCDFS* for more information on the correct procedure to manually mount the CD-ROM drive.

Question #8: In which directory should the AsimCDFS support programs be placed?



In the specified directory, a number of support programs for AsimCDFS will be installed, including AsimTunes, Disc Changer, AsimCDFS_Prefs, CDTV_Prefs and CD^{32}_Prefs. This will default to *SYS:AsimCDFS*.

Question #9: Which directory can be used for buffering AsimCDFS files?



AsimCDFS will require a directory in which it will buffer various files, including PhotoCD thumbnail icons, snapshot icon files and audio library files. As the number of files in this directory may grow as your CD-ROM collection expands, it is advisable to put this directory on a large hard drive partition, possibly your *Work:* partition. This is especially true if you will be using PhotoCD discs.

AsimCDFS should now be correctly installed! Wait for all disk activity to end and reboot your Amiga. If an error occurs, or your CD-ROM drive does not appear to be functioning correctly, consult the Trouble Shooting section for assistance.

Chapter 2

Using AsimCDFS

2.1 Activation

AsimCDFS can be activated in a number of ways depending upon your version of AmigaDOS and whether or not you specified that AsimCDFS be automatically mounted in the Installation script.

If you have AmigaDOS 2.0 installed on your Amiga, you will need to use the mount command as follows for activation:

```
mount <DEVICE> from devs:MountList.<DEVICE>
```

where <DEVICE> represents the appropriate device name as specified in the install procedure, usually CD0:.

For example, to manually activate AsimCDFS installed as CD0:, you would have to enter the following command:

```
mount CD0: from devs:MountList.CD0
```

If you chose Auto Mount in the Installation script, this command will be inserted into your *s:user-startup* file and will automatically be executed upon bootup.

With AmigaDOS 2.1 and above, Commodore has introduced the *SYS:Storage/DOSDrivers* directory. The files in this directory will each contain a conventional mountlist, with the mounted device assuming the file name.

A mountlist file will be created by AsimCDFS in the *SYS:Storage/DOSDrivers* directory, regardless of your response to the Auto Mount question. However, if you did specify that AsimCDFS should be automatically mounted upon bootup, then a `mount CD0:` command would be entered into your *s:user-startup* file.

If you want to manually mount AsimCDFS installed as CD0:, you would enter the following command from the CLI:

```
mount CD0:
```

Success of this command can be verified by both the momentary lighting of the busy light on the CD-ROM drive and by the presence of a CD0: device on either the Workbench screen or after the execution of an `info` command.

AsimCDFS is now ready for your use!

2.2 Use of AmigaDOS Commands

The beauty of a file system is that its operation is totally transparent to the user. All AmigaDOS commands, such as `dir`, `copy`, `list` and so on, function exactly as if they were executed on a floppy or hard drive. Feel free to use your favourite directory utilities such as SID or Directory Opus with AsimCDFS. This can simplify the traversal of the disc, especially where Macintosh HFS discs are concerned, as many non-standard characters are present with keycodes that are hard to remember.

Note: In the current version of AsimCDFS, no character translations are done on Macintosh HFS file names. As stated above, this will mean that some HFS file names will contain non-standard characters. These can be accessed from the Amiga keyboard via the *Alt key*.

2.3 A Word on Write-Protection

Due to the read-only nature of this particular CD-ROM technology, it is impossible to write to ISO 9660, High Sierra and Macintosh HFS volumes. Therefore, AmigaDOS will regard the CD-ROM disc as a very large, write-protected volume. All attempts to write to these types of volumes will result in a standard 'write-protected' requester.

AsimCDFS also gives you access to a number of other types of virtual volumes, such as PhotoCD, Corel Pro, Raw Sectors and CDDA. With these, you are given the ability to write to the Workbench icon files, allowing you greater customization. The actual data files, however, are still read-only.

2.4 Setting AsimCDFS Preferences

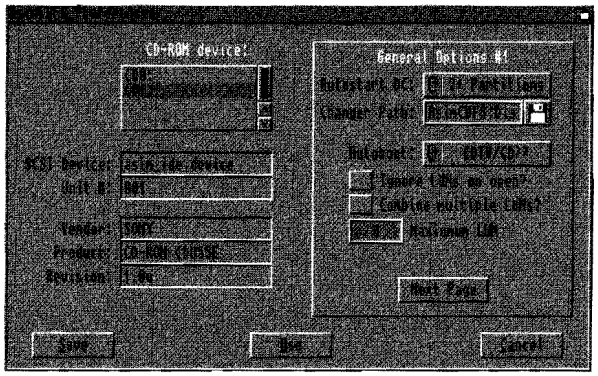
All options for AsimCDFS can now be set via an Intuition-based preferences editor. In most cases, this will eliminate the need to change cryptic mountlist entries.

The preferences program accepts one optional argument named CDROM, used to specify a CD-ROM drive to edit:

```
AsimCDFS_Prefs  [CDROM <device>]
```

Normally, AsimCDFS_Prefs can be started with no arguments.

You will be presented with the following window:



AsimCDFS Preferences

All available CD-ROM drives mounted in your system will be listed in the upper-left hand corner. You can choose a particular CD-ROM drive to edit by selecting one of these devices. Immediately upon doing so, identification information about the CD-ROM drive will be displayed in the *Product*, *Revision* and *Vendor* text gadgets. The revision number and revision date of the SCSI device will also be presented.

The preferences options are separated into eleven pages. Activating the *Next Page* gadget will cycle through to the next page. Alternatively, direct access to any page is available through the *Option Pages* menu. Below, each of the options will be listed and explained.

2.4.1 General Options #1

Autostart DiscChanger: When a disc is inserted into the CD-ROM drive, AsimCDFS can automatically start the DiscChanger utility. The following options are available:

- *Never* — DiscChanger will not be started;
- *Always* — Whenever a disc is inserted, DiscChanger will be automatically started;
- *2+ Partitions* — If a disc has two or more partitions, DiscChanger will be started. This option is helpful when using PhotoCD discs and hybrid ISO 9660/Mac HFS discs as it will automatically alert you to the presence of the other partitions; and,
- *3+ Partitions* — If a disc has three or more partitions, DiscChanger will be started.

DiscChanger will be accessed from the *Changer Path* option.

Changer Path: This will be complete path, including directory and program name, where the DiscChanger program can be found. If the *Autostart DiscChanger* option is set to a value other than *Never*, then this path will be utilized to run DiscChanger.

Autoboot from CD-ROM: A unique feature of AsimCDFS is the ability to autoboot from a CD-ROM disc. Three different options exist to control the autobooting feature:

- *Never* — AsimCDFS will not attempt to autoboot from the CD-ROM drive;
- *Resident Only* — The AsimCDFS file system itself will remain resident in memory during a reboot, though the system will not attempt to boot from the drive. This option is useful for people mounting multiple CD-ROM drives as only a single copy of AsimCDFS will be loaded in memory. Each AsimCDFS device mounted will use this resident copy, resulting in a savings of approximately 100K of memory;
- *CDTV/CD*^{32} — During a reboot, if a CDTV or CD^{32}

disc is discovered, AsimCDFS will autoboot from this disc. If another type of disc is detected, the system will boot as usual from the hard drive/floppy drive; and,

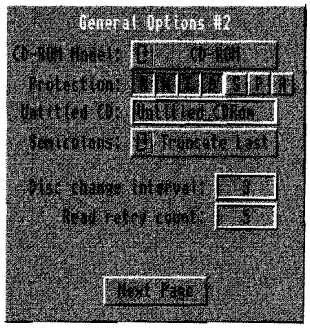
- *Any Disc* — During a reboot, if a CD-ROM disc is detected, AsimCDFS will autoboot from this disc. Using this option allows you to boot off of most Amiga-specific CD-ROM disks. The system will not boot off of audio CDs.

Ignore LUNs on open: This option is of interest only when using a CD-ROM drive with multiple units, such as the Pioneer DRM-60x. Two methods can be used when accessing a multi-LUN device: AsimCDFS can manually route its commands to the correct unit, or the SCSI controller can take care of directing the commands to the correct unit. This option should be selected for the first method (manually route commands) and unselected for the second.

Combine Multiple LUNs: This option is of interest only when using a CD-ROM drive with multiple units, such as the Pioneer-DRM-60x. When using a multi-disc changer, two methods can be used to access the various discs: 6 separate devices can be mounted (CD0, CD1, CD2, ..., CD5, for example) and access can be made to all devices simultaneously, or only one device can be mounted and the *DiscChanger* program can be used to select the desired disc. The first method is preferable for BBS use, while the second option could be used for other purposes, subject to personal preference.

Maximum LUN: When combining multiple LUNs into one device, AsimCDFS must be informed of how many LUNs to access. For the Pioneer DRM-60x, this value would be 5, representing the discs #0 through to #5.

2.4.2 General Options #2



General Options #2

CD-ROM Model: AsimCDFS has the ability to access either a CD-ROM drive, a hard drive, a DOS File, a CDTV, an A570 or a CD[32]:

- *CD-ROM* — For most users, AsimCDFS will be accessing either a SCSI or ATAPI (IDE) CD-ROM drive;
- *Hard Drive* — For users doing custom CD-ROM creation with programs such as our MasterISO software, it is quite useful to be able to access a hard drive as a CD-ROM volume. The hard drive must have a valid ISO 9660, High Sierra or Mac HFS image stored on it. Consult the Advanced Mountlist Creation section for information on creating the needed mountlist;
- *DOS File* — An AmigaDOS file can also be be accessed as a CD-ROM image. The file must be a valid ISO 9660, High Sierra or Mac HFS image file. Again, this is most useful for developers as it will allow verification of the output of a CD-ROM mastering program, such as MasterISO. Consult the Advanced Mountlist Creation section for further information on the required mountlist fields;

- *CDTV/A570* — This setting allows you to use AsimCDFS on a CDTV or an A570; and,
- *CD^{32}* — This setting allows you to use AsimCDFS on a CD^{32} machine.

Protection: Via these seven gadgets, you are able to set how the protection bits on the files and directories will be set for the write-protected files on the CD-ROM drive. Files that can be written to, such as the icon files in a PhotoCD volume, are not affected by these settings.

Untitled CD: If a CD-ROM disc is inserted which has no volume name, then the name in this field will be used instead. Untitled CD-ROM discs are common on the IBM platform. Of course, this string must represent a valid volume name and contain none of the following characters: **/ :**

Semicolons: File names on ISO 9660 discs usually consist of the file name with a semicolon and version number appended:

```
example_filename.txt;1
```

Most Amiga CD-ROM file systems automatically truncate the semicolon and present only the expected file name to the user. AsimCDFS provides the following options to control the handling of semicolons:

- *Pass Through* — AsimCDFS will pass through the whole file name as it exists on the CD-ROM disc — semicolons and all!;
- *Truncate Last* — In the ISO 9660 specification, semicolons are special reserved characters and are not permitted for use in a normal file name. Semicolons, however, are permitted within AmigaDOS file names. Contrary to the ISO 9660 specification, a number of Amiga-specific CD-ROM discs actually have semicolons as a part of the actual file name. Using the

truncate last option, AsimCDFS will truncate only the last semicolon in the file name (which is usually the appended version number) and present the rest of the expected file name unaltered; and,

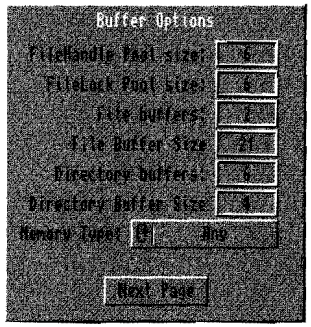
- *Truncate 1st* — By using this setting, AsimCDFS will truncate the file name at the first semicolon found.

Disc Change Interval: Due to the removable nature of CD-ROM discs, the CD-ROM drive must be polled periodically to check for the presence of a disc. The *Disc Change Interval* option will set the time, in seconds, between checks. This normal polling action will usually result in the momentary flashing of the activity light on the CD-ROM drive and/or the controller card. The polling consists of a quick inquiry to the drive and does not degrade performance of either the Amiga or the controller bus.

Note: If this value is set too high, then AsimCDFS may not notice that a new CD-ROM disc has been inserted into the CD-ROM drive. Attempts to read from a disc before AsimCDFS has registered the disc change may result in errors or even a software failure. We suggest that you keep this value to three seconds or less unless AsimCDFS is being used in an environment where you can *ensure* that a disc change will not occur (BBS use, for example).

Read Retry Count: If an error occurs when reading from the CD-ROM drive, AsimCDFS will re-attempt the operation. This option sets the maximum times that a read command will be re-attempted.

2.4.3 Buffer Options



Buffer Options

FileHandle Pool Size: For each file that is opened on the CD-ROM, a structure in memory called a FileHandle must be allocated. This option will determine the number of FileHandles that AsimCDFS will pre-allocate. This will reduce memory fragmentation and slightly decrease access time. The trade off, of course, is an increase in memory usage by AsimCDFS.

If your machine has a limited amount of memory, you will want to reduce the number of FileHandles that are pre-allocated. Alternatively, if you are running an application such as a BBS that will open a large number of files simultaneously, you may want to increase this value.

FileLock Pool Size: For each file or directory that is accessed on the CD-ROM, a structure in memory called a FileLock must be allocated. This option will determine the number of FileLocks that AsimCDFS will pre-allocate. This will reduce memory fragmentation and slightly decrease access time.

If your machine has a limited amount of memory, you will want to reduce the number of FileLocks that are pre-allocated.

Alternatively, if you are running an application such as a BBS that will access a large number of files or directories simultaneously, you may want to increase this value.

File Buffers: This represents the number of file buffers (of a size defined by the *File Buffer Size* option) that will be allocated upon mounting the CD-ROM drive. These buffers are areas of memory that will be used to temporarily store both file and directory information read from the CD-ROM disc. If you are running the CD-ROM in an environment where a number of files may be opened simultaneously for access (ie. a multi-user BBS system), increasing the number of file buffers will help performance. In a single-user system, a large number of file buffers will not have a measurable effect on performance.

File Buffer Size: When file information is read from the CD-ROM disc, usually a number of sectors are transferred at a single time. Doing so allows the CD-ROM drive to operate efficiently. The *File Buffer Size* option allows you to control how many sectors are read in at a time. By default, this is set to 21 sectors (each sector is 2K). However, some CD-ROM drives and/or controller cards have difficulty transferring this much data at a single time. If you experience extremely slow transfers or read errors, lowering this value to 2 or 1 may produce better results.

Directory Buffers: This represents the number of directory buffers (of a size defined by the *Directory Buffer Size* option) that will be allocated upon mounting the CD-ROM drive. These buffers are areas of memory that will be used to temporarily store directory information read from the CD-ROM disc. Increasing the number of directory buffers has a greater positive effect on performance as compared to increasing the number of file buffers.

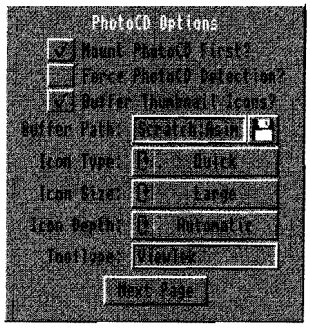
Directory Buffer Size: When directory information is read from the CD-ROM disc, usually a number of sectors are transferred at a single time. Doing so allows the CD-ROM drive to operate efficiently. The *Directory Buffer Size* option allows you to control how many sectors are read in at a time. By default, this is set to 4 sectors (each sector is 2K).

Memory Type: The Amiga system has two types of memory: Fast and Chip. The Memory Type option allows you to specify which type of memory will be used for all buffers:

- *Any* — AsimCDFS will attempt to use Fast memory when allocating buffer memory. If there is not enough Fast memory, Chip memory will then be used;
- *Fast* — Exclusively use Fast memory when allocating buffer memory. If there is not enough Fast memory, an error condition will result; and,
- *Chip* — Exclusively use Chip memory when allocating buffer memory. If there is not enough Chip memory, an error condition will result. Using only Chip memory may be required with SCSI controllers which are not aware of accelerated or expanded systems.

2.4.4 PhotoCD Options

In this section describing PhotoCD discs, the term PhotoCD refers to both Kodak PhotoCD discs and Corel Professional Photo discs.



PhotoCD Options

Mount PhotoCD First: If checked, AsimCDFS will place the PhotoCD volume at the top of the list of available partitions, resulting in the PhotoCD volume being automatically mounted. If this option is not checked, the PhotoCD volume will be placed after the corresponding ISO 9660 volume, resulting in it *not* being automatically mounted.

Force PhotoCD Detection: The manner in which AsimCDFS detects PhotoCD discs will properly recognize most PhotoCD discs. However, a few discs exist that fail our detection process. By selecting this option when needed, you can force AsimCDFS to mount all discs as PhotoCD volumes.

Buffer Thumbnail Icons: If checked, AsimCDFS will buffer the thumbnail icons created for the PhotoCD images to the directory specified by the *Buffer Path* option. If unchecked, the icons will be generated each time the disc is inserted.

Buffer Path: This will be a complete directory path used by the *Buffer Thumbnail Icons* option for saving the generated thumbnail icons.

Icon Type: Two different algorithms exist in AsimCDFS for converting the PhotoCD data to Workbench icons:

- *Quick* — for each pixel in the icon, this method will pick a suitable Workbench colour, though not necessarily the best; and,
- *Quality* — for each pixel in the icon, this method will pick the best colour available from the Workbench palette.

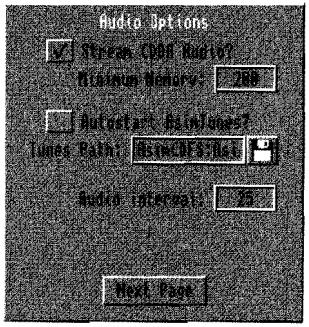
Icon Size: Sets the size of the icons to be created:

- *Large* — 96 x 64 pixels; and,
- *Small* — 48 x 32 pixels.

Icon Depth: Sets the number of colours that will be used for the generation of thumbnail icons. If *Automatic* is selected, AsimCDFS will set the the number of colours to reflect the current Workbench screen configuration.

ToolType: This string is used for the default tooltype of the thumbnail icons. For example, you may have a double-click on an icon automatically execute a viewing program, or an image processor.

2.4.5 Audio Options



Audio Options

Stream CDDA Audio: While reading CD-Digital Audio and when this option is selected, AsimCDFS will enter a streaming mode; that is, audio data will be read in a continuous stream from the CD-ROM drive and buffered in memory until it is requested by the application. Memory is allocated from the system as needed, although AsimCDFS will stop the streaming operation when the amount of available free memory drops below the value specified by *Minimum Memory.*

If the option is unchecked, then audio data will be requested from the CD-ROM drive as needed. Doing so, however, may introduce random pops and clicks in the sound data as most CD-ROM drives are unable to accurately position the read-laser when reading audio discs.

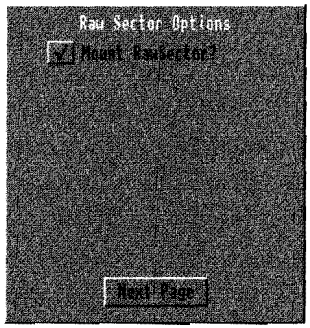
Minimum Memory: This value represents the minimum amount of free memory that must be available in the system for AsimCDFS to continue with a streaming CDDA read operation.

Autostart AsimTunes: If enabled, AsimCDFS will automatically start AsimTunes when an audio CD is inserted. AsimTunes will be accessed from the *Tunes Path* option.

Tunes Path: This will be a complete path, including directory and program name, where the AsimTunes program can be found. If the *Autostart AsimTunes* option is selected, then this path will be utilized to run AsimTunes.

Audio Interval: This value represents the length of time, in 1/75ths of a second, between updates of AsimTunes' time display.

2.4.6 Raw Sector Options

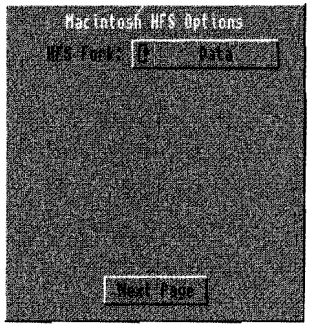


Raw Sector Options

Mount Raw Sector: If you have need to access the low level sector information on a CD-ROM disc, setting this option will instruct AsimCDFS to mount a Raw Sector volume.

If this option is not selected, a Raw Sector volume will not be added by AsimCDFS.

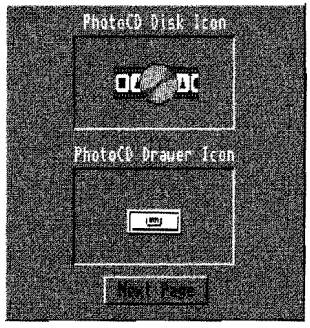
2.4.7 Macintosh HFS Options



HFS Options

HFS Fork: Using this option, you can select the HFS fork that AsimCDFS will access by default. Of course, this option will be of use only when accessing Macintosh HFS CD-ROM discs. The DiscChanger utility can be used to temporarily, and easily, change this option when experimenting with discs.

2.4.8 PhotoCD Icons



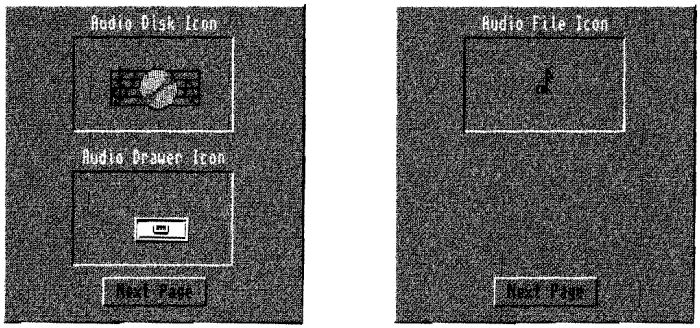
PhotoCD Icons

PhotoCD Disk Icon: Used as the default disk icon for either Kodak PhotoCD or Corel Pro Photo discs. An alternate icon

can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on the display area. This icon must be a disk icon.

PhotoCD Drawer Icon: Used as the default drawer icon for each of the 5 directories containing the IFF files. An alternate icon can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on the display area. This icon must be a drawer icon.

2.4.9 Audio Icons



Audio Icons

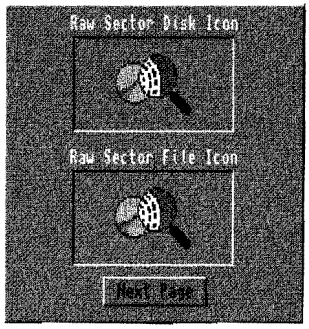
Audio Disk Icon: Used as the default disk icon for all CD-Digital Audio discs. An alternate icon can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on the display area. This icon must be a disk icon.

Audio Drawer Icon: Used as the default drawer icon for each of the 6 directories containing the various audio file formats. An alternate icon can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on

the display area. This icon must be a drawer icon.

Audio File Icon: Used as the default icon for each 16-bit CDDA audio file. An alternate icon can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on the display area. This icon must be a project icon.

2.4.10 Raw Sector Icons



Raw Sector Icons

Raw Sector Disk Icon: Used as the default disk icon for all Raw Sector partitions. An alternate icon can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on the display area. This icon must be a disk icon.

Raw Sector File Icon: Used as the default file icon for all Raw Sector data files. An alternate icon can be dragged onto the display area or can be specified via the file requester, which is activated by clicking on the display area. This icon must be a project icon.

2.5 Advanced Mountlist Creation

Advanced users may wish to setup a custom mountlist for AsimCDFS. This section will describe the mountlist fields which AsimCDFS requires.

In AsimCDFS Preferences, if you have set the CD-ROM model to CD-ROM drive, then AsimCDFS will be interested in the following mountlist lines:

device = <name of SCSI or ATAPI device>
unit = <unit # of CD-ROM drive>

Hard drive:

device = <name of IDE or SCSI device>
unit = <unit # of hard drive>

DOS File:

device = <full path and file name of image file>

CDTV/A570:

device = cdtv.device
unit = 0

CD^{32}:

device = cd.device
unit = 0

All other lines of the mountlist should be set to their default values. An example mountlist is found on the AsimCDFS install disk.

2.6 Trouble-Shooting

While connecting a CD-ROM drive is a fairly straight forward procedure, problems occasionally do occur. Below are listed the usual problems, symptoms and solutions that users have experienced. If your particular problem is not covered in one of these categories, contact our technical support department for further assistance.

Computer screen stays grey and does not start the bootup sequence. In some cases, the SCSI activity LED will remain solid.

The problem in this case is the SCSI bus:

- your CD-ROM drive may have the same SCSI ID as another device. Verify that all of the SCSI devices have a unique ID number. Consult the manual for each device on how to determine the SCSI ID number.
- the SCSI chain is not properly terminated. For correct operation of your SCSI bus, all devices, except for the last physically connected device, must have the termination resistors removed or turned off. Again, consult the manual for each device on how to disable/enable the termination resistors.
- your CD-ROM drive is incompatible with either your SCSI controller or one of the other SCSI devices. Some CD-ROM drives have difficulties dealing with SCSI Disconnect /Reconnect (a protocol used to manage the data flow through the SCSI bus). With certain SCSI controllers, a command may be used to disable the SCSI Disconnect/Reconnect. Contact your SCSI controller manufacturer for information on disabling the SCSI Disconnect/Reconnect. You may also wish to contact the CD-ROM manufacturer concerning upgrades to the drive and its internal firmware.

The computer boots normally, but no CD-ROM icon appears on the Workbench screen, or an error requester appears upon boot-up, or the error message "Could not get information for <device> Object name invalid" appears when accessing the CD-ROM drive from the CLI.

In this case, you have specified either a wrong name for the SCSI device or an incorrect SCSI ID number:

- Verify that you have entered both correctly during the install procedure. The values you have entered either will appear in the error requester or are found within the first few lines of the mountlist file.
- Using the SCSI Inquire program supplied on the *AsimCDFS Install* disk, verify that your CD-ROM drive is recognized by the SCSI controller. If it is not recognized, then verify that your CD-ROM drive is properly connected, power is applied, and the SCSI bus is properly terminated.

The computer boots normally, but a NDOS (Non-DOS) icon appears for your CD-ROM drive.

You may have either specified a wrong name for the SCSI device or an incorrect SCSI ID number, or do not have the SCSI bus terminated properly:

- Using the SCSI Inquire program supplied on the *AsimCDFS Install* disk, verify that your CD-ROM drive is recognized by the SCSI controller. If it is not recognized, then verify that your CD-ROM drive is connected properly, power is applied, and the SCSI bus is properly terminated.
- the SCSI chain is not properly terminated. For correct operation of your SCSI bus, all devices (except for the last physically connected device) must have the termination resistors removed or turned off. Again, consult the manual for each device on how to disable/enable the termination resistors.

Chapter 3

Using AsimTunes

An integral part of compact disc technology is Digital Audio — your CD-ROM drive has the ability to playback these audio discs. Of course, being computer controlled, greater flexibility and control is possible as compared to a consumer CD player. AsimTunes performs the function of an audio player and a librarian, via an attractive and efficient Intuition-based interface. For greater flexibility, an ARexx port is also implemented.

3.1 Activation

Initially, AsimTunes can be activated from either the CLI or Workbench. In either case, it will accept a number of arguments.

The **CLI** arguments are as follows:

AsimTunes [CDROM <device>]
[CX_POPUP yes/no] [CX_POPKEY <key>]
[CX_PRI <priority>]

For **Workbench** users, the following tooltypes are supported.

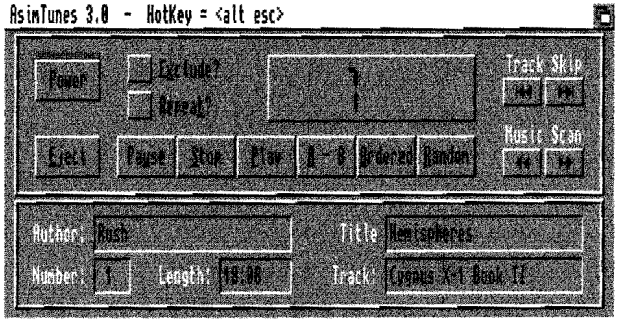
CDROM=<device>
CX_POPUP=yes/no
CX_POPKEY=<key>
CX_PRI=<priority>

where:

<device> refers to the device name of the CD-ROM as specified in the install procedure (ie. CD0:).
<priority> is an integer from -127 to 128 which the task priority will be set to
<key> is the commodity hotkey.

AsimTunes is implemented as a Commodity — as such, it can be hidden and brought to the foreground via keyboard shortcuts as determined by the CX_POPKEY argument. The keyboard shortcut defaults to *alt esc.*

When activated, AsimTunes will display a window resembling the following:



AsimTunes – Main window

3.2 Selecting a CD-ROM Drive

All control over audio functions by AsimTunes is directed through a particular device; therefore, you must inform AsimTunes of which CD-ROM drive you wish to use. This is achieved through the *Select CD-ROM* menu item in the *Project* menu. This function will open up a window containing all the AsimCDFS CD-ROM devices present in the system. Double clicking on an entry will select that CD-ROM drive.

If you have multiple CD-ROM drives connected to your Amiga, you may switch between devices at any time.

3.3 The Grand Tour

A brief tour of the layout and functions of AsimTunes is provided in this section. The three main sections of the program are briefly outlined below.

Time Display/CD Window
This is the main window of AsimTunes. Contained in this window are the standard control gadgets such as *Play, Stop* and *Pause.* Advanced controls including *Random* and *Ordered* play are also present.

The current track, as indicated in the large central time display, can be changed with the *Track Skip* gadgets.

During playback, the song can be fast-forwarded and fast-reversed via the *Music Scan* gadgets. This feature may not be supported by all CD-ROM drives.

The bottom half of this window displays the current disc's author, disc and track name, along with the current track length and number.

Edit CD
In this window, you are able to edit the current disc. It is accessible through the *Edit Disc* menu item in the *Project* menu. Most notably, you are able to enter and revise the author, title and track names. All the functions available are detailed in the *Current Audio Disc* section.

Edit Library
In this window, accessible through the *Edit Library* menu item in the *Project* menu, you are able to access the disc library. All the functions available are detailed in the *CD Library* section.

3.4 Playing Tracks

Four play modes are available in AsimTunes: Play, Ordered, Random, and A-B.

Play
Activating the *Play* gadget will commence a play operation. All tracks, from the current track up to and including the end track, will be played.

Alternatively, you can type in the number of the track you wish to play via the number keypad. If the track has two digits, press shift simultaneously with the first digit. For example, press *9* to play track #9; or, press *SHIFT* and *1* together, then press *2* to play track 12.

Ordered
The *Ordered* gadget will start an ordered play operation. All

tracks defined in the ordering will be played. See the *Current Audio Disc* section for more information on defining an ordering.

Random
Selecting the *Random* gadget will start a random play operation. Each track will be played in a random sequence.

A-B
The *A-B* gadget will start a play operation only on the defined A-B segment. See the *Current Audio Disc* section for more information on defining an A-B segment.

In addition to the above play modes, a number of other functions exist that can alter the playback. They are:

Track Skip Up/Down
If a playback operation is currently in progress, these two gadgets will cause the playback to restart at the previous or the next track respectively. During a random play, the *Track Skip Down* gadget will cause the play operation to restart at a previously played track while the *Track Skip Up* gadget will select a new, unplayed track.

If no playback operation is in progress, then these gadgets will advance or reverse the current track.

Pause
This function is equivalent to the pause operation on a consumer CD player — it will suspend the play operation at the current position. This function has no effect if a playback is not proceeding.

Note: Not all CD-ROM drives will hold in pause mode indefinitely. Some may automatically exit pause mode after a given length of time — usually a few minutes.

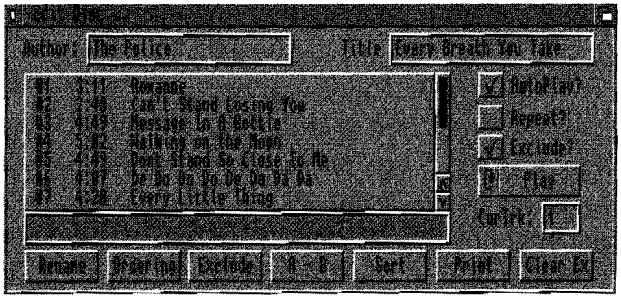
Stop
This function is equivalent to the stop operation on a consumer CD player — it will cease any play operation. If no playback operation is in progress, *Stop* will bring the current track display back to track #1.

Exclude?
During a playback operation, it may be desirable to skip or exclude certain tracks. By setting this *Exclude?* flag, all tracks that have been marked for exclusion in the *Edit Disc* window will be skipped. See the *Current Audio Disc* section for more information on setting a track's exclude flag.

Repeat?
If the *Repeat?* flag is set, all play operations will loop indefinitely.

3.5 Current Audio Disc

Via the *Edit Disc* menu item in the *Project* menu, the following window can be opened up:



AsimTunes – Edit Disc window

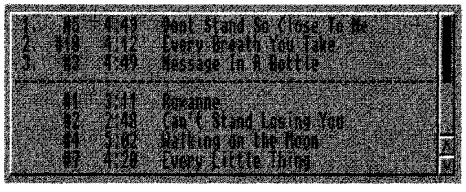
Through this window, a number of functions can be accessed:

Enter Disc/Author Name
Via the two top string gadgets, labeled *Author* and *Title*, you can enter in the author and title of the particular disc.

Rename Tracks
Selecting the *Rename* gadget will enter the program into rename mode. Clicking on any of the available tracks will cause the track name to be entered into the bottom string gadget. Enter the desired name for this track, pressing the enter key when done. **Note:** Both the `ctrl-X` and `right-amiga-X` keyboard combinations will erase the entire contents of the current string gadget. This eliminates the need to press delete repeatedly. Also note that the `TAB` key will automatically select the next track. Selecting the now-highlighted *Rename* gadget will end the rename mode.

Note: the text information for the track titles, author and disc titles is not available from the audio disc — it must be typed in manually by the user.

Order Tracks
A play mode exists in AsimTunes that allows you to specify the order in which you wish tracks to be played. Via the order mode, you are able to place the tracks into such an arrangement. Selecting the *Ordering* gadget will enter AsimTunes into the order mode.



AsimTunes – Ordering

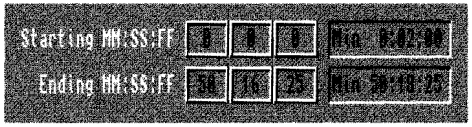
The track display area will rearrange itself into two sections, divided by a broken line. All entries above this line will have an order assigned to them, while none below this line will be considered during an ordered play.

To change the order of any item, merely click on the desired item and drag it to the appropriate place. Selecting the now-highlighted *Ordering* gadget will end the order mode.

A-B

It may be desirable to select a segment of audio for playback. Through the *A-B* function, you can enter in the starting and ending minute, second and frame of the desired segment. Of course, the ending time must be greater than the starting time. Track boundaries may be crossed with this segment. For reference:

- 1 minute equals 60 seconds;
- 1 second equals 75 frames;
- 1 frame equals 1/75 of a second.



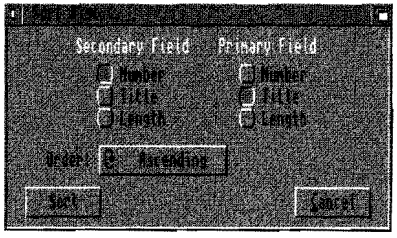
AsimTunes – A - B

Exclude Tracks

Selecting the *Exclude* gadget will enter AsimTunes into the exclude mode. Clicking on any of the tracks will toggle its exclude flag — as indicated by an x in front of the track name. If the *Exclude?* flag on the main screen is selected, then these highlighted tracks will not be played.

Clear Excludes
Selecting the *Clear Ex* gadget will clear the exclude flags for all tracks in the current disc.

Sort Disc
Through the sort function, you can order your tracks into any order you wish. A number of choices must be made concerning this order.



AsimTunes – Sort Disc

Primary field represents the first field that the sort will consider. For example, if your *Primary field* is set to Length, then the tracks will be sorted according to the Length field.

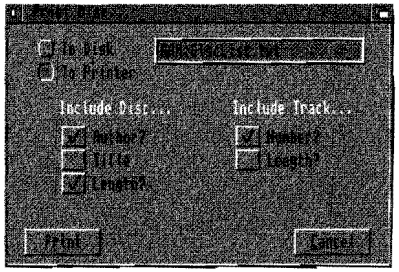
Secondary field represents the second field that the sort will consider if two entries share the same Primary field. For example, consider two tracks with the same length: if the Primary field is set to Length, then both of the above tracks will have an equal Primary field. Thus, if the Secondary field is set to Title, then for these two tracks the sorting will continue by Title.

Note: The Primary and Secondary fields must be different.

The *Order* gadget represents the order in which your tracks will be sorted: *Ascending* refers to an order from A to Z, while *Descending* refers to an order of Z to A.

Print Disc

AsimTunes also has the ability to print out a customized listing of your audio disc. You have the option of including any of the data fields for the disc, as well as selecting the destination of the output.



AsimTunes – Print Disc

To Disk, To Printer: If *To Disk* is selected, then the output will be directed to the file specified in the associated string gadget. *To Printer* will direct the output to your preferences-specified printer.

Include Disc: The three options under this heading — Author, Title and Length — will either include or exclude the respective data item. For example, if you wish all information printed about the disc, then select all items. If you wish only the track information to be printed, then unselect all these items.

Include Track: The two options under this heading — Number and Length — will either include or exclude the respective data item. The track titles will always be printed.

Set AutoPlay

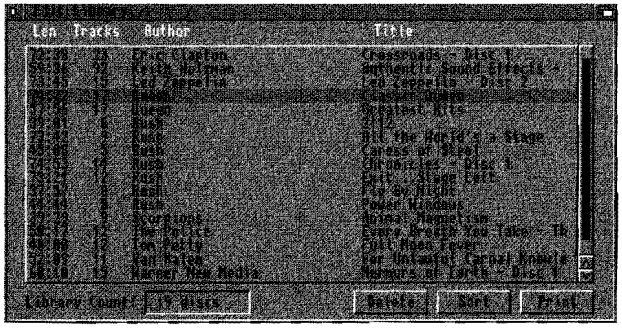
AsimTunes has the ability to automatically begin playing a disc upon insertion, if you so choose. Via the *AutoPlay?* and associated gadgets, you can configure this feature.

If *AutoPlay?* is selected, then the below gadgets will unghost. These gadgets will allow you to set the mode of play — *Random, Ordered* or plain *Play* — as well as the play flags and current track (where plain *Play* can begin).

Direct Track Play
Double clicking on any of the tracks available on the disc will cause AsimTunes to immediately being a play operation at the indicated track. This eliminates the need to use the track up/down functions to position the play at a particular track — very helpful with sound effect CDs containing 90+ tracks!

3.6 CD Library

The *Edit Library* function in the *Project* menu will open up a large window containing a list of all the audio discs present in your personal library. From this window, you may delete, sort or print your library.

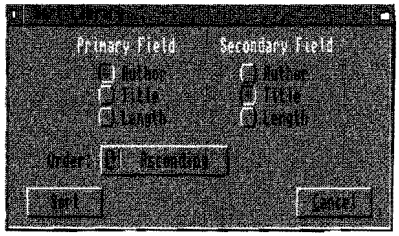


AsimTunes – Edit Library window

Delete
Selecting any disc which is not currently loaded in the CD-ROM drive will unghost the Delete gadget. By selecting this gadget, you will remove the audio disc from the library.

Sort

As audio discs are inserted into your library, they are added to the end of the list. Unless your discs are added in alphabetical order (a highly unlikely event), they will be displayed in a random way. Through the sort function, you can order your discs in any fashion you wish. A number of choices must be made concerning the order of your library.



AsimTunes – Sort Library

Primary field represents the first field that the sort will consider. For example, if your *Primary field* is set to *Author*, then the library will be sorted according to the *Author* field.

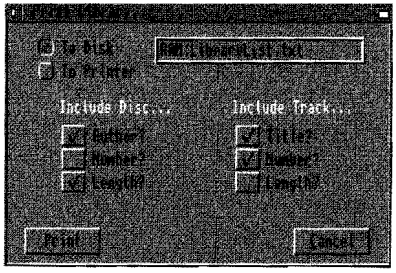
Secondary field represents the second field that the sort will consider if two entries share the same *Primary field*. For example, consider two discs titled *Chronicles* and *A Farewell to Kings* by the author Rush: if our Primary field is set to Author, then both of the above discs will have an equal Primary field. Thus, if the Secondary field is set to Title, then for all discs by Rush the sorting will continue by Title.

Note: The Primary and Secondary fields must be different.

The *Order* gadget represents the order in which your library will be sorted: *Ascending* refers to an order from A to Z, while *Descending* refers to an order of Z to A.

Print

AsimTunes also has the ability to print out a customized listing of your disc library. You have the option of including any of the data fields for both tracks and discs, as well as selecting the destination of the output.



AsimTunes – Print Library

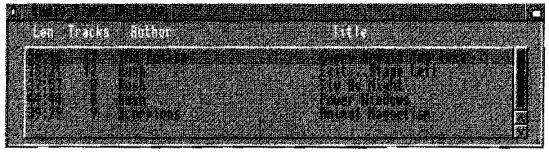
To Disk, To Printer: If *To Disk* is selected, then the output will be directed to the file specified in the associated string gadget. *To Printer* will direct the output to your preferences specified printer.

Include Disc: The three options under this heading will either include or exclude the respective data item. For example, if you wish all information printed about the discs, then select all items. The disc title will always be included in any output.

Include Track: The three options under this heading will either include or exclude the respective data item. If you wish to have only the disc information output, then leave these items unselected.

3.7 Selecting Discs

If your CD-ROM drive is a multi-disc player, such as the Pioneer DRM-60x series, then you may have multiple audio discs loaded. Through the *Select Discs* menu item, you are able to choose which disc you wish to access. This function will open up a window containing a list gadget. All available discs will be displayed — clicking on any of the entries will select that disc.



AsimTunes – Select Discs

If you have a CD-ROM drive that accepts only one disc (most CD-ROM drives are of this type), then the display will only show one entry.

3.8 Audio Through Amiga Hardware

Usually, audio data is processed and output via the CD-ROM drive through its on-board audio hardware. This requires the CD-ROM drive be attached to an external amplifier. However, certain CD-ROM drives also have the ability to send the audio data over the SCSI or IDE bus for processing and playing by the host computer. The Amiga is then free to process and route the audio through its own hardware. AsimTunes supports this feature via the *Amiga Audio?* flag in the *Settings* menu.

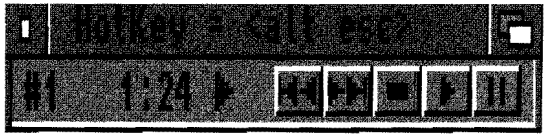
The steps followed when playing audio through the Amiga hardware are:

- read in a segment of audio data;
- convert the data from 16-bit down to 8-bit; and,
- play the segment of data.

Unfortunately, the above sequence requires a large amount of processor time due to the large amount of data being transferred and processed. We recommend using this feature only with accelerated systems — 68030 and 68040 based systems work the best.

3.9 Titlebar Mode

The AsimTunes program provides a complete set of features for your audio needs. However, associated with these features is a large graphical interface. In some cases, access to the basic play features through a compact interface may be more desirable. AsimTunes supports such a mode through the *Title Bar?* option in the *Settings* menu. Selecting this option will reduce the AsimTunes interface to the following:



AsimTunes – Title Bar

The following operations are supported via the 5 gadgets (from left to right):

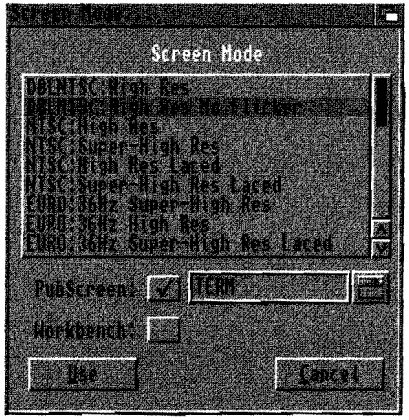
Track Down, Track Up, Stop, Play and Pause.

3.10 Miscellaneous Options

Screen Mode

The type of screen that AsimTunes opens up on can be selected by the *Screen Mode* menu item in the *Settings* menu. Three choices are available: Public, Workbench and Custom. Select *Workbench* if you want AsimTunes to be present on the default

Workbench screen. Select *PubScreen* if you want to open up AsimTunes on a public screen. The screen gadget to the right may be used to open up a list of available public screens. Otherwise, you can type the name of the public screen into the text gadget. Finally, the top portion of the window will contain all available custom screen modes — double clicking on any of the entries will select that particular mode.



AsimTunes – Screen Mode

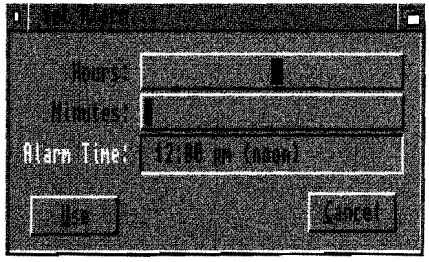
Time Display

The update frequency of the time display panel is controlled via the *Audio Interval* option in the AsimCDFS Preferences program. The frequency can also be toggled to 2/75ths of a second via the *Frame Accurate?* menu item in the *Settings* menu. This will instruct AsimTunes to poll the CD-ROM drive every 2/75ths of a second — or every second frame, where a frame refers to 1/75th of a second of music on an Audio disc. Of course, this will result in a *dramatic increase* of activity on the SCSI or IDE bus!

The *Absolute Time?* menu item in the *Settings* menu will cause AsimTunes to update the time display using absolute time, with the start of the first track being time 0. The default is to use relative time within each track — time 0 is set to the start of each track.

Global AutoPlay
In the *Edit CD* menu item, you are able to set the *AutoPlay?* flag, which will cause the audio disc to be automatically played upon insertion. The *Global AutoPlay?* menu item in the *Settings* menu will force all discs to be autoplayed, regardless of their individual settings.

Time of Day Alarm
An alarm feature is built into AsimTunes allowing you to specify a time of day to begin a play operation. The *AutoPlay* operation, as set in the *Edit Disc* function, is used when beginning an alarm play. The time is specified through the *Set Alarm* function in the *Settings* menu. It is specified in hours and minutes and is accurate to within a few seconds. The alarm is toggled on and off by the *Alarm?* menu item.



AsimTunes – Set Alarm

3.11 Mixed Mode CDs

Many CDs are not exclusively audio or data. It is common to include both on one disc. When this is the case, the data track

will usually occupy track #1, while the audio tracks will occupy the remaining tracks (from 2 through to 99).

If you insert such a CD, AsimTunes will automatically determine which tracks are audio tracks and only allow access to these. All data tracks will be skipped when using the track up/down functions. As well, when an audio playback is in progress, any attempt to read from the CD will cause the current play operation to stop.

3.12 ARexx

The ARexx port name for AsimTunes is AsimTunes_ARexx. AsimTunes supports the following ARexx commands:

PLAY
Usage: Play()
Begins a play operation starting from the current track and proceeding until the end of the disc.

STOP
Usage: Stop()
Will stop any play operation currently in progress.

RANDOM_PLAY
Usage: Random_Play()
Begins a random play operation.

ORDERED_PLAY
Usage: Ordered_Play()
Begins an ordered play operation.

GET_NUM_DISCS
Usage: num = Get_Num_Discs()
Returns the number of audio discs in the CD-ROM drive.

SELECT_DISC
Usage: Select_Disc(num)
Selects disc *#num* as the active disc. *Num* is an integer between 1 and the maximum number of audio discs.

SELECT_CDROM
Usage: Select_CDRom(device)
Will open the CD-ROM indicated by the string *device* as the current CD-ROM drive. *Device* must represent a valid AsimCDFS CD-ROM device.

GET_DISC_TITLE
Usage: string = Get_Disc_Title()
Returns a string representing the title of the current disc.

GET_DISC_AUTHOR
Usage: string = Get_Disc_Author()
Returns a string representing the author of the current disc.

GET_DISC_LENGTH
Usage: seconds = Get_Disc_Length()
Returns an integer representing the length, in seconds, of the current disc.

GET_TRACK_TITLE
Usage: string = Get_Track_Title()
Returns a string representing the title of the current track.

GET_TRACK_LENGTH
Usage: seconds = Get_Track_Length()
Returns an integer representing the length, in seconds, of the current track, or -1 if there is no current disc.

GET_NUM_TRACKS
Usage: num = Get_Num_Tracks()
Returns an integer representing the maximum number of tracks in the current disc, or -1 if there is no current disc.

SET_CURRENT_TRACK
Usage: Set_Current_Track(num)
Sets the current track to the track indicated by the integer *num*. *Num* must be between 1 and the maximum number of tracks on the disc.

GET_CURRENT_TRACK
Usage: num = Get_Current_Track()
Returns the current track number, or -1 if there is no current disc.

SHUT_DOWN
Usage: Shut_Down()
Quits AsimTunes.

EJECT_DISC
Usage: Eject_Disc()
Will eject the disc caddy, if possible.

HIDE_WINDOW
Usage: Hide_Window()
Will close down the interface windows, but keeps AsimTunes resident. The program can be reactivated via the hot key keyboard combination.

SHOW_WINDOW
Usage: Show_Window()
Will open and activate the main window and any auxiliary windows that were previously open.

SET_FRAME_ACCURATE
Usage: Set_Frame_Accurate(flag)
Will set the state of the *Frame Accurate?* menu item. If *flag* equals 0, then the *Frame Accurate?* item will be cleared, otherwise, it will be set.

GET_FRAME_ACCURATE
Usage: flag = Get_Frame_Accurate()
Returns the state of the *Frame Accurate?* menu item. If it is set, the function returns 1, otherwise it returns 0.

SET_GLOBAL_AUTOPLAY
Usage: Set_Global_Autoplay(flag)
Will set the state of the *Global Auto Play?* menu item. If *flag* equals 0, then the *Global Auto Play?* item will be cleared, otherwise, it will be set.

GET_GLOBAL_AUTOPLAY
Usage: flag = Get_Global_Autoplay()
Returns the state of the *Global Audio Play?* menu item. If it is set, the function returns 1, otherwise it returns 0.

SET_ABSOLUTE_TIME
Usage: Set_Absolute_Time(flag)
Will set the state of the *Absolute Time?* menu item. If *flag* equals 0, then the *Absolute Time?* item will be cleared, otherwise, it will be set.

GET_ABSOLUTE_TIME
Usage: flag = Get_Absolute_Time()
Returns the state of the *Absolute Time?* menu item. If it is set, the function returns 1, otherwise it returns 0.

SET_ALARM
Usage: Set_Alarm(seconds)
Will set the time for an alarm function and the *Alarm?* menu item. The variable *seconds* represents the number of seconds since midnight. If seconds equals -1, then the alarm is cancelled and the *Alarm?* menu item is cleared.

GET_ALARM
Usage: seconds = Get_Alarm()
Returns the current time, in seconds, that the alarm function is set to. If the *Alarm?* menu item is not set, this will return -1.

SET_AMIGA_AUDIO
Usage: Set_Amiga_Audio(flag)
Will set the state of the *Amiga Audio?* menu item. If *flag* equals 0, then the *Amiga Audio?* item will be cleared, otherwise, it will be set.

GET_AMIGA_AUDIO
Usage: flag = Get_Amiga_Audio()
Returns the state of the *Amiga Audio?* menu item. If it is set, the function returns 1, otherwise it returns 0.

SET_TITLE_BAR
Usage: Set_Title_Bar(flag)
Will set the state of the *Title Bar?* menu item. If *flag* equals 0, then the *Title Bar?* item will be cleared, otherwise, it will be set.

GET_TITLE_BAR
Usage: flag = Get_Title_Bar()
Returns the state of the *Title Bar?* menu item. If it is set, the function returns 1, otherwise it returns 0.

Chapter 4

PhotoCD and Corel Discs

One of the more recent innovations to be introduced to the CD-ROM world is Kodak's PhotoCD. In brief, PhotoCD allows you to have negatives or slides scanned and transferred onto a CD-ROM disc. The images are stored in 5 resolutions, from 192x128 to 3072x2048.

AsimCDFS provides transparent access to PhotoCD discs via a virtual PhotoCD volume. The PhotoCD image files are converted to 24 bit IFF colour image files on-the-fly, as needed.

4.1 Kodak PhotoCD Compatibility

A Kodak PhotoCD disc is a CD-Recordable disc organized into an ISO 9660 volume. The AsimCDFS file system is able to directly deal with this type of PhotoCD disc. The actual CD-ROM drives, on the other hand, need to be PhotoCD compatible — either single session or multi session.

Most, but not all, CD-ROM drives are single session compatible — referring to the ability to read the first set of images written to the PhotoCD disc. If your CD-ROM drive does not recognize

at least the first set of images on the disc, then an upgrade of its internal firmware will be necessary.

The current generation of CD-ROM drives released by manufacturers are classified as multi session compatible — referring to their ability to read the second and subsequent sets of images written to a PhotoCD disc.

Consult the text file **`CD-ROM_Drives`** on the *AsimCDFS Install* disk for information relating to the compatibility of CD-ROM drives.

4.2 Corel ProPhoto Compatibility

Corel Corporation produces a large collection of photographs, published on CD-ROM disc. These Corel Professional Photo discs are regular CD-ROM discs containing PhotoCD files. As they are regular CD-ROM discs (as opposed to CD-Recordable discs that Kodak PhotoCDs are distributed on), they are compatible with all CD-ROM drives.

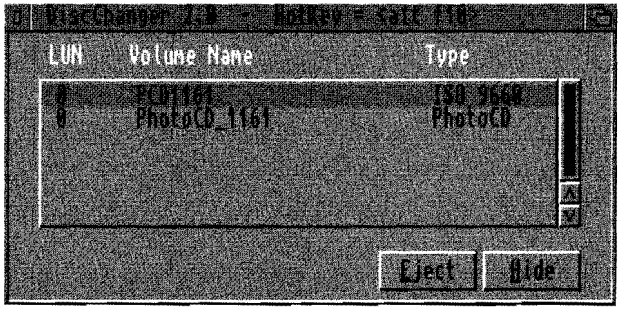
Corel ProPhoto discs are stored in the ISO 9660 format.

4.3 Selecting the PhotoCD Volume

When a CD-ROM disc is inserted into the CD-ROM drive, AsimCDFS will examine the disc and determine what volumes are stored on it. If the CD-ROM disc contains an ISO 9660 volume, then AsimCDFS will further examine the disc to determine if it contains a PhotoCD volume.

The first step in using a PhotoCD disc is to select the PhotoCD volume. The Disc Changer utility is used for this purpose. For

example, the following screen shot illustrates a CD-ROM disc containing both an ISO 9660 volume and a virtual PhotoCD volume.



DiscChanger with PhotoCD Volume

To mount the PhotoCD volume, simply click on its entry in the listing. This will instruct AsimCDFS to dismount the current volume and mount the requested PhotoCD volume.

Via the *Autostart DC* option in AsimCDFS_Prefs, you can instruct DiscChanger to automatically start when any disc has been inserted into the CD-ROM drive or when 2 or more partitions have been detected. Using the latter option provides an easy method of knowing when a disc contains multiple volumes.

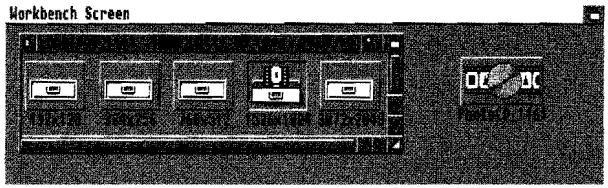
Via the *Mount PhotoCD First?* option in AsimCDFS_Prefs, you can have AsimCDFS mount the PhotoCD volume first, instead of the corresponding ISO 9660 volume. Doing so will negate the need to use the DiscChanger utility, giving you hassle-free access to PhotoCD discs.

4.4 Reading PhotoCD Discs

Once the PhotoCD volume has been mounted, you will have access to the five PhotoCD resolutions:

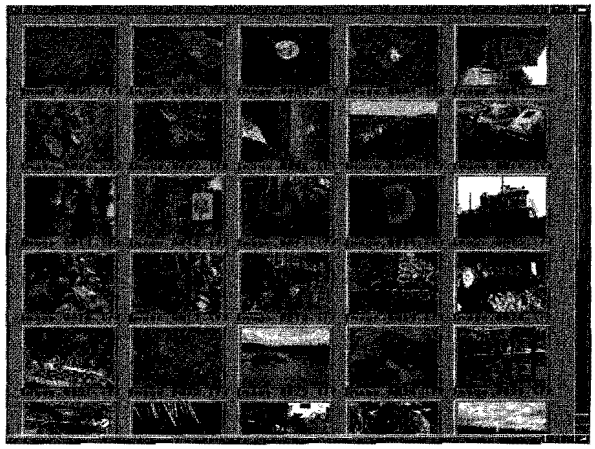
- 192 x 128
- 384 x 256
- 768 x 512
- 1536 x 1024
- 3072 x 2048

The images are duplicated in five separate directories, corresponding to the above resolutions. From Workbench, a standard PhotoCD would look like the following when opened:



Standard PhotoCD From Workbench

Opening one of the sub-directories will have AsimCDFS automatically generate colour thumbnail preview icons for each image. A typical disc will resemble the following:



Thumbnail Icons

Each of the above icons represents a 24-bit colour IFF image and is generated transparently from the corresponding PhotoCD file as needed. Since the files are in the IFF format, no special conversion will be needed to use them with most graphic software packages.

To allow for greater customization, AsimCDFS allows the icon files for PhotoCD discs to be written to. That is, you are able to snapshot the icons and drawer windows for these types of discs and Workbench will remember your settings the next time the disc is mounted.

For general interest, on an Amiga 4000/040, the following times and memory requirement were noted when copying the IFF images to a hard drive. As you can see, the conversion times are extremely quick and are not memory intensive. Of course, your application will require additional memory for storing the image.

Image Size	*Conversion Time*	*Memory Required*
192 x 128	0:01	3K
384 x 256	0:01	6K
768 x 512	0:04	11K
1536 x 1024	0:55	65K
3072 x 2048	8:22	348K

4.5 Miscellaneous Options

In this section, various options that govern the PhotoCD volumes will be discussed. Further discussion of these options can be found in *Chapter 2.4 — Setting AsimCDFS Preferences.* The settings for these options can be altered via the AsimCDFS_Prefs utility.

While AsimCDFS is able to automatically detect genuine Kodak PhotoCD and Corel ProPhoto CD-ROM discs, it may fail to recognize certain 3rd party CD-ROM discs containing PhotoCD files. The *Force PhotoCD Detection?* option will force AsimCDFS to recognize the disc as a PhotoCD volume.

The colour Workbench icons that are displayed for PhotoCD images are generated by AsimCDFS automatically. Each icon may take a few seconds to generate, especially when in 256 colour mode. The *Buffer Thumbnail Icons?* option will have AsimCDFS save the icons to hard drive in the directory specified by the *Buffer Path* option. The next time this particular disc is accessed, the icons will be retrieved from the buffer directory instead of being re-generated, resulting in a quicker response time.

Note that palette information is not saved with icon files. If AsimCDFS generates a set of icons and you then change the palette settings for Workbench, the next time you access this PhotoCD disc the icons may look incorrect. The solution for this situation would be to delete all the files in the *Buffer Path* directory after you change the Workbench palette, forcing AsimCDFS to generate new icons.

Four additional options exist that allow you to configure how the generated thumbnail icons will look. *Icon Type* specifies how much care AsimCDFS will take when selecting the colours — being more careful requires more time. A setting of *Quick* will result in adequate colour choices, though the icons will be generated extremely quickly. A setting of *Quality* will result in the best colour choices being made, though more time will be spent doing so. If you want to quickly get a visual

representation of what is on the disc, you will want to use the *Quick* setting. If, however, a particular disc will be used many times, you might want to use *Quality* and have AsimCDFS buffer the icons to hard drive.

The number of colours used by AsimCDFS when generating the icons is determined by the setting of the *Icon Depth* option. Using the *Automatic* setting will have AsimCDFS use all available Workbench colours. The other 8 settings will have AsimCDFS generate 2, 4, 8, 16, 32, 64, 128 or 256 colour icons respectively. Of course, if you select 256 colours, your Amiga and Workbench must be able to display the requested number of colours!

In practice, the thumbnail icons look best with a 256 colour Workbench screen. Icons rendered with less colours definitely suffer in picture quality. Remember, the system is trying to display a representation of a 16 million colour image. Doing so on a 4 colour Workbench screen may not look so pretty.

Another setting is *Icon Size*. Two simple choices are allowed: *Large* or *Small*. Large icons are easier to view, though take a slightly longer time to generate, while small icons are generated more quickly, though offer a poorer representation of the image.

The final option, *ToolType*, allows you to specify a default tooltype to be used when generating icons. This command will be executed any time a thumbnail icon is double clicked.

Chapter 5

CD-Digital Audio CDs

5.1 CDDA Compatibility

Another recent addition to CD-ROM technology is the ability for drives to not only play digital audio but also to transfer the 16-bit digital audio data over the SCSI (or IDE) bus to the host computer. Once the transfer is complete, the computer is free to process the data — some exciting possibilities include playing the audio through its internal audio hardware or making the audio data available for other programs.

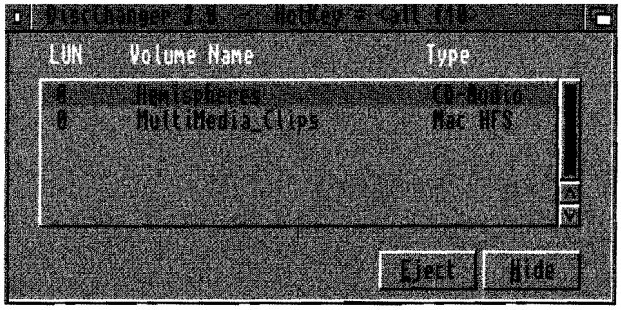
As noted, not all CD-ROM drives support the CDDA transfer feature. Consult the file `CD-ROM_Drives` on the *AsimCDFS Install* disk. If your CD-ROM drive does not support this feature, you may be required to upgrade the firmware on the drive.

5.2 Selecting the CDDA Volume

When a compact disc is inserted into the CD-ROM drive, AsimCDFS will examine the disc and determine what volumes are stored on it. If the compact disc contains one or more audio

tracks and if your CD-ROM drive supports CDDA transfers, then a CDDA volume will be created.

The first step in using a CDDA disc is to select the CDDA volume. The DiscChanger utility is used for this purpose. For example, the following screen shot illustrates a CD-ROM disc containing both an Macintosh HFS volume and a virtual CDDA volume:



DiscChanger with CDDA Volume

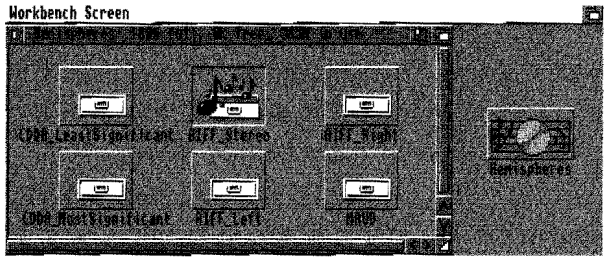
To mount the CDDA volume, simply click on its entry in the listing. This will instruct AsimCDFS to dismount the current volume and mount the requested CDDA volume.

Via the *Autostart DC* option in AsimCDFS_Prefs, you can instruct DiscChanger to automatically start when any disc has been inserted into the CD-ROM drive or when 2 or more partitions have been detected. Using the latter option provides an easy method of knowing when a disc contains multiple volumes.

5.3 Reading CDDA Files

Once the CDDA volume has been mounted, you will have access to the 16-bit audio data on the disc. From Workbench, a

standard CDDA volume will resemble the following:



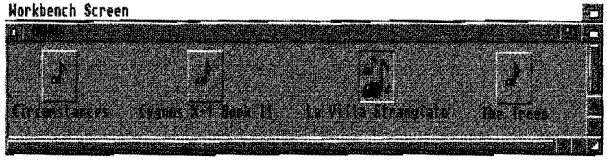
Standard CDDA from Workbench

As shown above, AsimCDFS will convert the audio data supplied by the CD-ROM drive to the following six formats:

- *CDDA Least Significant* — this file is a raw dump of the data supplied from the CD-ROM drive. The data is structured in pairs of left and right channel data, each 16-bits wide. 588 pairs of data equals 1/75th of second at 44.1KHz. Each 16-bit sample is stored with the lowest set of bits first. For example, a 16-bit sample such as $56fa will be stored as $fa, $56. A common use for this type of data is with CD-R writing software;
- *CDDA Most Significant* — this file is a raw dump of the data supplied from the CD-ROM drive. The data is structured in pairs of left and right channel data, each 16-bits wide. 588 pairs of data equals 1/75th of second at 44.1KHz. Each 16-bit sample is stored with the highest set of bits first. For example, a 16-bit sample such as $56fa will be stored as $56, $fa. A common use for this type of data is with CD-R writing software;
- *AIFF Stereo* — also referred to as Audio-IFF, this format is an extremely common format supported by most audio packages and platforms. AIFF Stereo files contain 16-bit stereo audio sampled at 44.1KHz;

- *AIFF Mono, Left Channel* — an Audio-IFF file, containing only mono data from the left channel. The data is 16-bit and sampled at 44.1KHz;
- *AIFF Mono, Right Channel* — an Audio-IFF file, containing only mono data from the right channel. The data is 16-bit and sampled at 44.1KHz; and,
- *MAUD* — This format is a 16-bit audio format used primarily with sound products from MacroSystems, such as their Toccata sampler. The data is 16-bit, sampled at 44.1KHz.

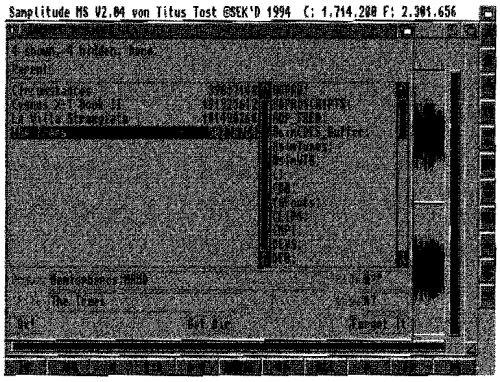
In each of the six directories, you will find a file representing the audio data for its respective track. For example, the above disc has 4 tracks, thus, in each of the directories you will find four files.



Individual CDDA Files

Once you have determined which particular audio file format you require, the next step would be to load the file into the desired application — usually an audio editing program. Note that these samples are 16-bit and will require a program that is able to handle 16-bit audio. A number of programs exist for the Amiga that handle 16-bit audio files exceptionally well.

For example, the following illustrates a MAUD file being loaded into the Samplitude audio editing program:



Importing MAUD File into Samplitude

5.4 Audio Library

By default, the track names of any audio disc will be named track.x (ie. Track #1 will be named track.1, etc.) However, you will notice that the track and disk names on the previous screen shots all contained proper names. The naming of tracks is made possible through an audio library maintained by AsimCDFS.

The disc volume name and the track names are all alterable via the AmigaDOS `rename` command for tracks, the `relabel` command for the disc volume name or via the *Rename* menu item in the Workbench menu. For example, the following will illustrate how to rename track #3 as *TheTrees*:

```
rename CD0:MAUD/Track.3 CD0:MAUD/TheTrees
```

The following restrictions apply to the names that you may use:

- the file name must be a valid AmigaDOS file name. That is, the name cannot contain a slash or colon;
- The file name must be less than 26 characters. This restriction results from the fact that a *.info* extension is appended to each file name to create an associated icon file; and,

- Each file name must be unique.

Alternates to the AmigaDOS rename command are the librarian functions in AsimTunes. The library accessed for the CDDA volumes is the same library accessed by the AsimTunes program; therefore, any changes made by AsimTunes through its *Edit Disc* function will immediately be reflected on the CDDA volume. Consult *Chapter 3.5 — Current Audio Disc* for more information.

5.5 Audio Streaming

On a regular CD-ROM disc, it is common to have 2048 bytes of data stored per sector. In addition, exact timing information is stored with each sector, allowing the CD-ROM drive to read any individual sector. On CD-Digital Audio discs, however, each data block contains 2352 bytes of audio data and does not contain this exact timing information. Thus the CD-ROM drive is unable to determine *exactly* where the read laser is positioned.

Once the CD-ROM drive positions the read laser and begins reading data, however, subsequent and sequential read operations will produce correct results as long as the host computer is able to accept a *continuous* stream of data from the CD-ROM drive. If the Amiga falls behind in dealing with the audio data, the CD-ROM drive will have to back track. When this occurs, the drive will approximate where it thinks the desired audio block is located — remember, there is no pin-point timing information on an audio disc. More often than not, the CD-ROM drive will pick a block that is slightly ahead or behind the requested block. The end result of this would be the introduction of an unwanted pop or click in the audio sample.

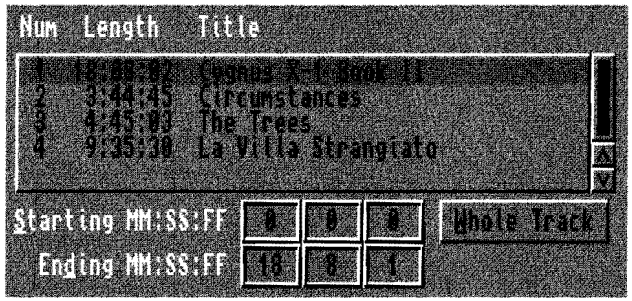
AsimCDFS deals with this situation by introducing an *Audio Streaming* mode; that is, when a read operation begins, AsimCDFS will continuously read in audio data from the CD-ROM drive and buffer it in the Amiga memory. This allows the CD-ROM drive to process the audio disc, as it requires, in an uninterrupted stream. Data will be accepted until either the whole segment has been read or the Amiga memory is filled. While this stream operation is proceeding, AsimCDFS will also process any requests from your application, using the buffered audio data as necessary.

As mentioned, the stream operation may stop if the Amiga memory is all used. More precisely, the stream operation will stop if the amount of available memory falls below the value specified by the *Minimum Memory* option in AsimCDFS_Prefs. The streaming operation will automatically begin again as necessary.

Note: if you experience numerous pops and clicks when importing a sound sample into an application, this may be an indication that your machine or controller card may not be able to handle the high data transfer rate and process the audio stream at the same time. This is especially true when using 4x or 6x speed CD-ROM drives or certain Zorro-II SCSI controller cards in an Amiga 4000. One possible solution to this would be to copy the desired sound sample from the CD to a hard drive partition and then access the sample from the hard drive. In this manner, the Amiga is free to devote its resources entirely to transferring the audio data from the CD to the hard drive.

5.6 Selecting Audio Segments

By default, AsimCDFS will access a whole track. It may be desirable, however, to only access a segment of the track. Via the DiscChanger utility, it is possible to select such a segment. The following window is opened up via the *Show Additional Info?* flag in the *Settings* menu:



Selecting a CDDA Segment

All tracks on the current disc are listed in the center gadget — select the desired track from this list. Using the *Starting MM:SS:FF* and *Ending MM:SS:FF* gadgets, you are able to enter starting and ending times for the desired segment. The *Whole Track* gadget will reset the current track segment to reference the whole track.

Chapter 6

Raw Sector Volume

Often, it is useful to be able to read the low level sector data on storage devices. With hard drives and floppy drives, numerous sector level editors are available that allow direct access to this information. However, with CD-ROM drives, these sector editors do not work.

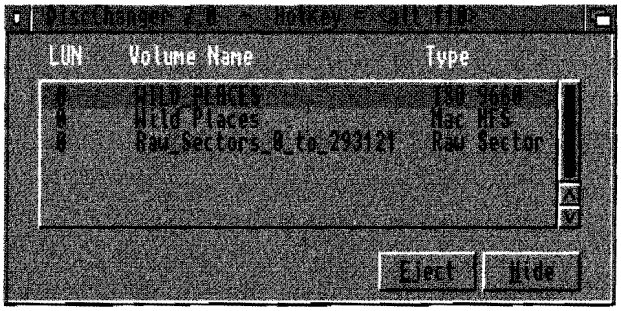
Through the Raw Sector feature, AsimCDFS allows you to easily access the low level information on a CD-ROM disc.

6.1 Selecting a Raw Sector Volume

When a compact disc is inserted into the CD-ROM drive, AsimCDFS will examine the disc and determine what volumes are stored on it. If the compact disc contains CD-ROM data, a Raw Sector volume may also be created.

Note: The *Mount Raw Sector?* option in AsimCDFS_Prefs *must* be selected for AsimCDFS to create a Raw Sector volume. If it is not selected, no volume will be created.

The first step in using a Raw Sector disc is to select the corresponding Raw Sector volume. The DiscChanger utility is used for this purpose. For example, the following screen shot illustrates a CD-ROM disc containing an ISO 9660 volume, a Macintosh HFS volume and a virtual Raw Sector volume:

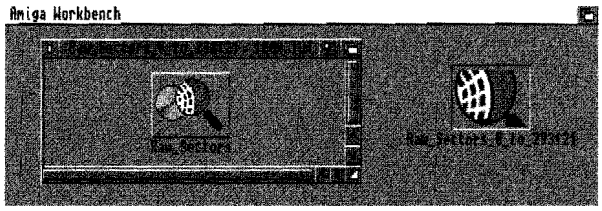


DiscChanger with Raw Sector Volume

To mount the Raw Sector volume, simply click on its entry in the listing. This will instruct AsimCDFS to dismount the current volume and mount the requested one.

6.2 Using Raw Sector Data

Once the Raw Sector volume has been mounted, you may access the data via Workbench or the CLI. Via Workbench, the following disc icon and window will appear:

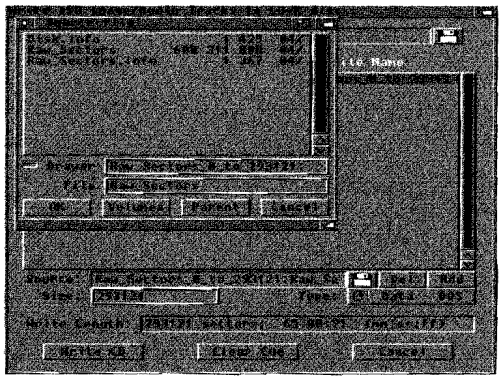


Raw Sector Volume From Workbench

Contained on the volume will be a file named *Raw_Sectors*, which is a direct byte-for-byte copy of the data contained on the CD-ROM disc. Data contained at byte 0 in the file corresponds to the data contained at byte 0, sector 0 on the CD-ROM disc and continues as a direct copy until the last byte of the CD-ROM disc is reached.

An extremely useful application for Raw Sector volumes is in conjunction with CD-R recording. For ISO 9660 formatted discs, the *Raw_Sector* data file is, in fact, a valid ISO 9660 image file and can be used directly as a source image file for CD-R mastering software. The same holds for High Sierra, Mac HFS and even non-standard CD-ROM formats (such as Unix formatted discs). This allows for an easy method of directly copying CD-ROM discs.

For example, the following screen shot illustrates a Raw Sector file being imported in a write operation with Asimware Innovations' CD-R recording software, MasterISO:



Importing Raw Sector File

6.3 Special Considerations

Two circumstances may arise that will cause problems when reading a Raw Sector file:

1. CD-ROM data is spread across multiple tracks; and,
2. the CD-ROM drive incorrectly reports back the end of the CD-ROM disc.

With CD-R discs, such as Kodak PhotoCD discs or multi session CD-R discs, it is common for the data to be recorded over multiple tracks. This is in direct contrast to CD-ROM discs where the data is stored entirely in a single track (usually track #1). An ordinary CD-ROM drive usually has problems reading the areas between the tracks and may report back an error. This type of disc is unsuitable for use with the Raw Sector function.

Some CD-ROM drives report back the length of a disc incorrectly, usually by adding a few sectors to the total length of the disc. In this case, when reading the end of the *Raw_Sector* file, an error may be reported.

If you will be using Raw Sector volumes for direct copying of CD-ROM discs, it is advisable to test out the disc by copying the *Raw_Sector* file to either a hard drive or a NULL: device.

Chapter 7

CDTV Emulation

7.1 Compatibility

AsimCDFS 3 includes the ability to emulate the Commodore CDTV platform. An immediate observation would be that the CDTV is merely an Amiga with a built-in CD-ROM drive — why is it necessary to emulate an Amiga on an Amiga? In truth, the CDTV is an Amiga with a number of extra software libraries and devices. Included in AsimCDFS are emulations of the following components that make the CDTV machine unique:

- autobooting from CD-ROM discs;
- cdtv.device;
- bookmark.device;
- cardmark.device;
- playerprefs.library;
- keyboard equivalents of the joypad; and,
- CDTV_Preferences program.

The other component of CDTV emulation is the hardware configuration of your Amiga. The closer your Amiga matches an original CDTV, the better compatibility you will achieve. The usual configuration for a CDTV is:

- 68000 processor;
- 1MB of CHIP memory, no FAST memory;
- ECS graphics chipset;
- single speed CD-ROM drive;
- Workbench v1.3;
- keyboard, mouse, joypad; and,
- a small amount of non-volatile RAM.

AsimCDFS contains a built-in intelligent system degrader utility that will automatically degrade your machine, as best it can, to match the above configuration. Of note, it will disable the AGA chipset on Amiga 1200 and 4000 machines and will eliminate the fast memory in your system, if needed.

The CDTV is a Workbench 1.3 based machine and, unfortunately, a number of CDTV titles expect to run in this environment. On the other hand, AsimCDFS v3 requires Workbench 2.0 or higher to function; thus some of these titles are incompatible with our emulation system. Limited success may be had with these 1.3 dependent titles using AsimCDFS v1, which will work under Workbench 1.3. This version is available to registered users and can be found on our BBS or ftp site.

On the *AsimCDFS_Install* disk you will find a text file titled **`CDTV_Titles`** which both lists the CDTV titles we have tested with our software and documents any problems we found.

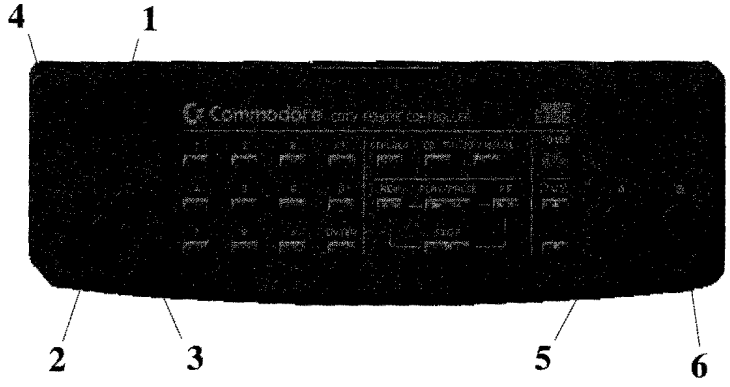
7.2 Playing CDTV Titles

Two methods are available for running CDTV titles. First, you can set the *AutoBoot* flag in AsimCDFS_Prefs to either *CDTV/CD*[32] or *Any Disc*. The next time you reboot with a CDTV disc in the CD-ROM drive, AsimCDFS will have the

Amiga boot from it instead of the hard drive.

The second method is to use the SimBoot utility which will simulate the Amiga rebooting and will start the CDTV title. Double clicking on the SimBoot icon will automatically start the boot process. This second method may be used if you experience problems with the autobooting method.

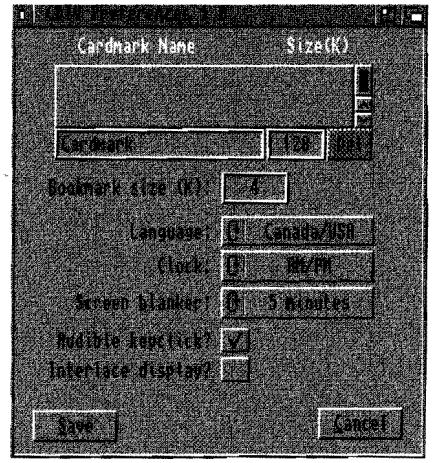
Once the title begins running, the following keys will be functionally equivalent to the joypad buttons:



Button #	*Keyboard Equivalent*
1	Arrow Up
2	Arrow Down
3	Arrow Right
4	Arrow Left
5	Left Shift
6	Right Shift

7.3 Preference Options

Via the CDTV Preferences program, you are able to change a number of options pertaining to the CDTV emulation.



CDTV Preferences

The top grouping of gadgets titled *Cardmark Name* allows you to specify the name and size of a card mark file. A cardmark file is used by AsimCDFS to emulate removable, non-volatile memory cards which are used to store user information. By default, this would be **`cardmark`** with a size of 128K. You are able to define a number of cardmark files, possibly one for each program that would use them, and switch between them.

The gadget titled *Bookmark size* allows you to define the size of the bookmark file. A bookmark file is used by AsimCDFS to emulate the built-in non-volatile memory in a CDTV which is used to store various preferences settings (ie. language choice, high scores, etc.) By default, this is set to a size of 4K. Only one bookmark file can be used.

The *Language* gadget allows you to select the language that the CDTV titles should use. Note that not all CDTV titles will respect this choice.

Commodore's CDTV machine had a built-in LCD clock on the front on the unit. The *Clock* option would control whether the time display would be in 12 hour or 24 hour mode. This option is also used by CDTV titles to determine which format they should display timing information.

The *Screen Blanker* gadget allows you to specify how long the system will wait without user-activity taking place before running the default screen blanker.

Audible keyclick?, if selected, will have the system sound a click each time a key is pressed on the keyboard. If unselected, no sound will be produced.

Interlace display? will instruct CDTV titles to use an interlace display. Otherwise, a non-interlaced screen will be used.

Chapter 8

CD^{32} Emulation

8.1 Compatibility

AsimCDFS 3 includes the ability to emulate the Commodore CD^{32} platform. An immediate observation would be that the CD^{32} is merely an Amiga with a built-in CD-ROM drive — why is it necessary to emulate an Amiga on an Amiga? In truth, the CD^{32} is an Amiga with a number of extra software libraries and devices. Included in AsimCDFS are emulations of the following components that make the CD^{32} machine unique:

- autobooting from CD-ROM discs;
- cd.device;
- nonvolatile.library;
- lowlevel.library;
- keyboard equivalents of the joypad; and,
- CD^{32}_Preferences program.

The other component of CD^{32} emulation is the hardware configuration of your Amiga. The closer your Amiga matches an original CD^{32}, the better compatibility you will achieve. The usual configuration for a CD^{32} is:

- 68020 processor;
- 2MB of CHIP memory, no FAST memory;
- AGA graphics chipset;
- double speed CD-ROM drive;
- Workbench v3.1;
- joypad; and,
- a small amount of non-volatile RAM.

AsimCDFS contains a built-in intelligent system degrader utility that will automatically degrade your machine, as best it can, to match the above configuration. Of note, it will eliminate the fast memory in your system, if needed.

The CD^{32} is a Workbench 3.1 based machine and a number of CD^{32} titles expect this environment. You will definitely achieve better compatibility with a system running Workbench 3.1. Consult your local Amiga dealer for information on upgrading.

Please note that the CD^{32} machine is based on the AGA graphics chipset. A number of titles will require this chipset in order to run — thus, they will need an Amiga 1200 or 4000. Those titles that do not use the AGA screen modes, however, may work on older Amiga models.

On the *AsimCDFS_Install* disk you will find a text file titled `CD32_Titles` which both lists the CD^{32} titles we have tested with our software and documents any problems we found.

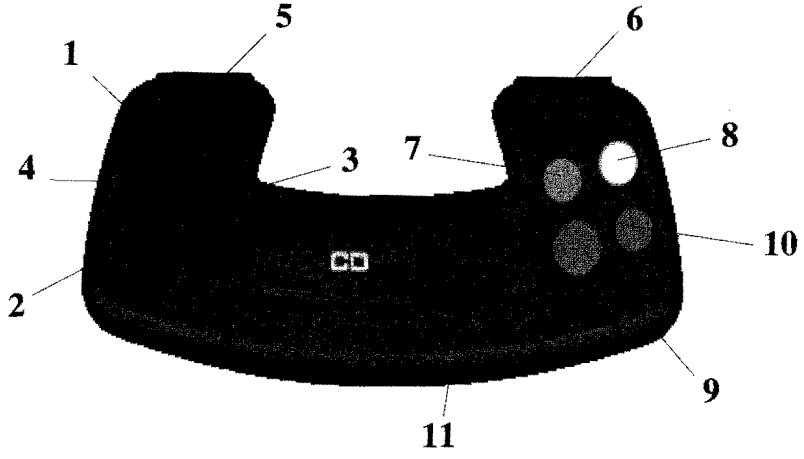
8.2 Playing CD^{32} Titles

Two methods are available for running CD^{32} titles. First, you can set the *AutoBoot* flag in AsimCDFS_Prefs to either *CDTV/CD^{32}* or *Any Disc*. The next time you reboot with a CD^{32} disc in the CD-ROM drive, AsimCDFS will have the Amiga

boot from it instead of the hard drive.

The second method is to use the SimBoot utility which will simulate the Amiga rebooting and will start the CD^{32} title. Double clicking on the SimBoot icon will automatically start the boot process. This second method may be used if you experience problems with the autobooting method.

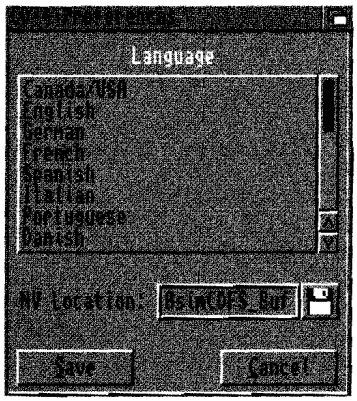
Once the title begins running, the following keys will be functionally equivalent to the joypad buttons:



Button #	*Keyboard Equivalent*
1	Arrow Up
2	Arrow Down
3	Arrow Right
4	Arrow Left
5	Left Shift
6	Right Shift
7	keypad #7
8	keypad #9
9	keypad #1
10	keypad #3
11	keypad #0

8.3 Preference Options

Via the CD^{32} Preferences program, you are able to change two options pertaining to the CD^{32} emulation.



CD^{32} Preferences

The first option that can be specified is the default language that CD^{32} titles should use. Simply choose the desired language from the *Language* list.

The second option, *NV Location,* specifies which directory will be used to store non-volatile buffer files. These files are used to simulate the non-volatile memory that is present in the CD^{32}. By default, this will be set to *AsimCDFS_Buffer:NonVolatile*.

Chapter 9

Using DiscChanger

DiscChanger is an AmigaDOS Commodity which allows you to: switch between various data partitions that AsimCDFS has found on the CD-ROM drive, choose your default HFS fork, select audio segments and eject the disc caddy.

9.1 Activation

Initially, DiscChanger can be activated from either the CLI or Workbench. In either case, it will accept a number of arguments.

The **CLI** arguments are as follows:

DiscChanger [CDROM <device>]
[CX_POPUP yes/no] [CX_POPKEY <key>]
[CX_PRI <priority>]

For **Workbench** users, the following tooltypes are supported.

CDROM=<device>
CX_POPUP=yes/no
CX_POPKEY=<key>
CX_PRI=<priority>

where:

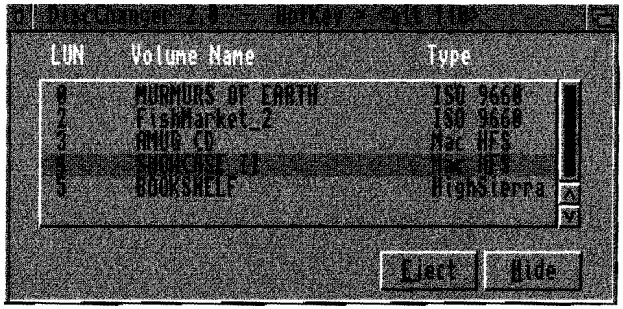
<device> refers to the device name of the CD-ROM as specified in the install procedure (ie CD0:).

<priority> is an integer from -127 to 128 which the task priority will be set to

<key> is the commodity hotkey.

DiscChanger is implemented as a Commodity — as such, it can be hidden and brought to the foreground via keyboard shortcuts as determined by the CX_POPKEY argument. The keyboard shortcut defaults to *alt f10.*

When active, a similar window will be displayed:



DiscChanger

9.2 Operation

Usually, only one data partition will be found on a single CD-ROM disc. However, there do exist CD-ROM discs that contain multiple ISO 9660 data partitions, or are a hybrid ISO 9660 and Macintosh HFS disc. As well, if you have a multi-disc changer such as the Pioneer DRM 60x, you may also have multiple partitions. In these cases, you will be given a list of the available partitions.

Currently, AsimCDFS can identify and mount the following types of partitions:

- High Sierra;
- ISO 9660;
- Macintosh HFS;
- PhotoCD;
- Corel Professional Photo;
- CD-Digital Audio; and,
- Raw Sector.

The following points will describe the purpose and operation of the menu items and gadgets found in DiscChanger:

Gadgets
The main focal point of the DiscChanger window is the large list gadget which lists all the partitions that AsimCDFS has identified on the particular CD-ROM drive. Each line represents a particular partition and contains the logical unit (for multi-disc changers such as the Pioneer 60x CD-ROM drive), the volume name and the type of volume. Clicking on any of the entries displayed here will signal AsimCDFS to mount the indicated partition.

Hide: Causes DiscChanger to close its window, though it will remain present and running in the background. The program can be reactivated by pressing the hotkey combination, which defaults to *alt f10*.

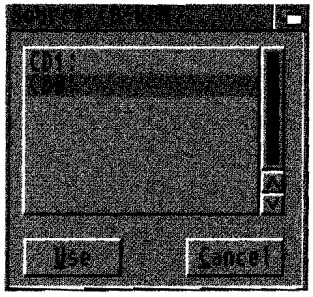
Eject: Will eject the disc caddy — of course, CD-ROM drives with manual eject mechanisms will not respond to this command.

Menu Items
Under the *Project* menu, the following items are available:

Quit: Will cause the program to close the window and terminate the program.

Hide: Causes DiscChanger to close its window, though it will remain present and running in the background. The program can be reactivated by pressing the hotkey combination, which defaults to *alt f10.*

Select CD-ROM: Brings up a requester containing a list of all CD-ROM drives present in the system. Via this function, you may select the CD-ROM drive that DiscChanger will reference. For example, the following window shows a system where two CD-ROM drives are mounted:

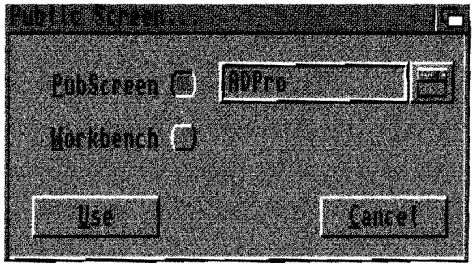


Select CD-ROM

Under the *Settings* menu, the following items are available:

Save Settings: Will save the current settings (CD-ROM selection, Show Additional Info menu flag, pop key, screen position and screen type) into a preferences file. These options will automatically be adopted the next time DiscChanger is run.

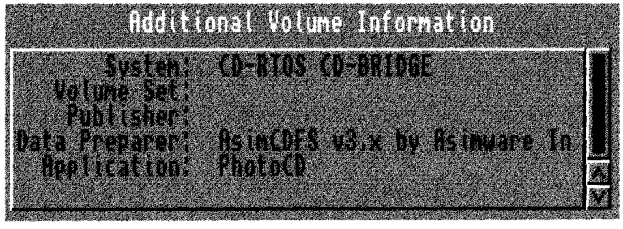
Public Screen: Opens up the following window, allowing you to choose which screen DiscChanger will display its interface on. Valid choices are to use either the Workbench screen or a Public Screen.



Public Screen

If you choose to use a Public Screen, you must enter in the text gadget the name of the appropriate screen. Alternatively, the Screen gadget in the top right corner will present a list of the current public screens available in the system, allowing you to easily chose the desired screen.

Show Additional Info: Opens up an auxiliary area in which additional information about the currently mounted partition is displayed. For ISO 9660, PhotoCD and Corel Pro Photo discs, a number of text lines describing the target system and the author are displayed:



Additional Volume Information

For Macintosh HFS discs, the following area is opened:

Additional HFS Information

HFS Fork: Selects the default HFS Fork for the device. The choices are *Data, Resource* and *MacBinary II*. Most Macintosh discs will have the relevant data stored in the Data fork, though experimentation will lead you to the correct setting for each particular disc.

For CD-Digital Audio discs, the following auxiliary information area is opened, through which you are able to select segments of the audio tracks:

Additional CDDA Information

By default, when reading digital audio from a standard audio disc, the whole track will be read. For an average 4 minute track, this may amount to over 40MB of data! Obviously, you may only require a small segment of the song. Using the *Starting MM:SS:FF* and *Ending MM:SS:FF* gadgets, you are able to enter starting and ending times for the desired segment.

The *Whole Track* gadget will reset the current track segment to reference the whole track.

9.3 ARexx

The ARexx port name for DiscChanger is DiscChanger_ARexx. DiscChanger supports the following ARexx commands:

EJECT_DISC
Usage: Eject_Disc()
Will eject the disc magazine, if possible.

HIDE_WINDOW
Usage: Hide_Window()
Will close down the window, but keeps DiscChanger resident. The program can be reactivated via the hot key keyboard combination.

SHOW_WINDOW
Usage: Show_Window()
Will open and activate the main window.

SHUT_DOWN
Usage: Shut_Down()
Quits DiscChanger.

MOUNT_PARTITION
Usage: Mount_Partition(num)
Will mount the partition indicated by the integer *num*. *Num* must be between 1 and the maximum number of partitions.

MAX_PARTITIONS
Usage: num = Max_Partitions()
Returns the maximum number of data partitions available.

SELECT_CDROM

Usage: Select_CDRom(device)

Will open the CD-ROM indicated by the string *device* as the current CD-ROM drive. *Device* must represent a valid AsimCDFS CD-ROM device.

HFS_FORK

Usage: HFS_Fork(fork)

Will set the default HFS Fork to that indicated by *fork:*

fork	HFS Fork
res	Resource
data	Data
bin	MacBinaryII

PARTITION_TYPE

Usage: type = Partition_Type(num)

Will return the type of partition indicated by the integer *num.* Num must range between 1 and the maximum number of partitions.

Type will be of the following:

type	Partition
1	High Sierra
2	ISO 9660
3	Macintosh HFS
4	PhotoCD
5	Corel ProPhoto
6	CD-Digital Audio
7	Raw Sector

CDDA_FIRST_TRACK
Usage: first = CDDA_First_Track()
Returns the first, or lowest track number on the current partition. If no audio tracks are present, numerical 0 is returned. While it is common for audio tracks to begin at track #1, it is not required. Track numbers will range sequentially from the first track to the last track.

CDDA_LAST_TRACK
Usage: last = CDDA_Last_Track()
Returns the last, or highest track number on the current partition. If no audio tracks are present, numerical 0 is returned.

CDDA_TRACK_LENGTH
Usage: len = CDDA_Track_Length(num)
Returns the length of the track as indicated by the argument *num. Num* must range between the first track and the last track numbers. *Len* is expressed in frames; 1 frame equals 1/75th of a second, 1 second equals 75 frames, 1 minute equals 60 seconds.

CDDA_WHOLE_TRACK
Usage: CDDA_Whole_Track(num)
Will set the audio segment to the entire track for the audio track indicated by *num. Num* must range between the first track and the last track numbers.

CDDA_PARTIAL_TRACK
Usage: CDDA_Partial_Track(num, start_frame, end_frame)
Will set the audio segment for the track indicated by *num.* The start and end points for the segment are indicated by *start_frame* and *end_frame* respectively. These two values are expressed in frames, relative to the start of the track.

Chapter 10

Using SCSI Inquire

Over the lifetime of your CD-ROM drive, the need will arise to know or verify some of the internal information that the drive contains: SCSI Unit #, CD-ROM Vendor, Product code and the internal firmware revision. SCSI Inquire will provide this information to you through a point-and-click interface. In fact, SCSI Inquire will provide you with information on any SCSI device connected to your Amiga.

As well, SCSI Inquire will allow you to easily determine the name and version of the SCSI devices present in your system. This information is needed to successfully install AsimCDFS.

Note: No alteration of any data on your hard drives (or other devices) will occur since this program *only reads* information from a SCSI device.

10.1 Activation

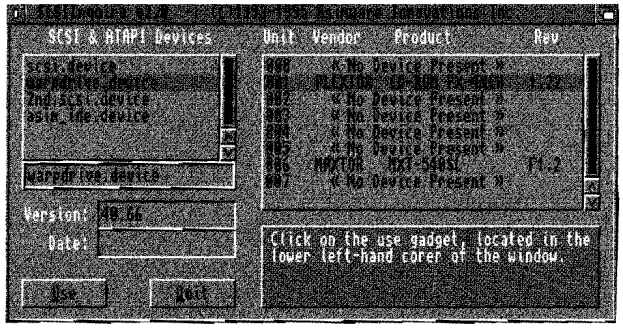
SCSI Inquire accepts one argument:

SCSI Inquire [forceide]

The forceide argument is for use with our ATAPI CD-ROM

driver kit and will have SCSI Inquire automatically look for ATAPI CD-ROM drives.

When active, a window resembling the following will be displayed:



SCSI Inquire

10.2 Operation

SCSI Inquire will present you with a window divided into four sections. The top-left corner will contain a list of all devices that are found in the system (excluding the normal devices that are *definitely not* SCSI devices). In the above example, SCSI Inquire has found four devices that may be SCSI devices. Clicking on any of the entries will instruct SCSI Inquire to scan the device for any connected units.

Alternatively, you can manually type in a device name in the string gadget. This may be required for some non-autobooting SCSI controllers or ATAPI CD-ROM driver software.

In the bottom-left corner, the version and date of the selected SCSI device is displayed.

The result of the scan is displayed in the top-right list gadget. The unit #, vendor, product and firmware revision are all displayed. If no device is found at a particular unit #, then the message « *No Device Present* » is displayed. Clicking on any of the valid units will select that unit and unghost the *Use* gadget.

If you are running SCSI Inquire from the *AsimCDFS Install* program, step by step instructions will be displayed in the lower-right corner. Briefly, the procedure is to select the appropriate SCSI device and CD-ROM unit and then click on the *Use* gadget. This will send the needed information back to the install script.

Note: Your SCSI unit must be properly attached and powered-on to be found by SCSI Inquire. If a particular device does not show up, it may be improperly connected, power is not turned on, or its unit number may be conflicting with another device.

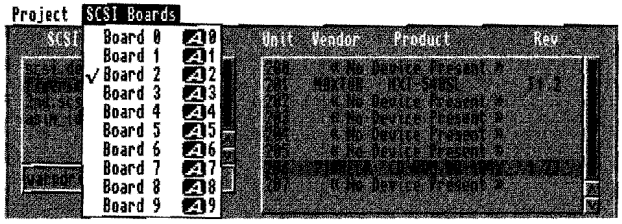
10.3 Multiple SCSI Boards

The Amiga operating system allows for multiple SCSI boards to be installed in a single system. If you have a similar configuration, it will fall into one of the following categories:

- With two or more SCSI boards, originating from different manufacturers, each board will install its driver software using a unique device name. All of these device names will appear in the SCSI Device gadget. You may choose the appropriate SCSI driver from this list;
- With two or more Commodore SCSI controllers (A590, A2091, A3000, A3000T, A4091 or A4000T) the first controller card will be named scsi.device. The second controller card will be named 2nd.scsi.device,

the third will be named 3rd.scsi.device, etc; and,

- With two or more controller cards of the same manufacturer, such as GVP or the multiple SCSI ports on the NewTek Flyer, a single device driver will be installed. For this case, SCSI Inquire has the ability to select individual boards via the SCSI Boards menu.



Multiple SCSI Boards

10.4 Advanced Operation

When a valid device and unit are selected, the *Use* gadget will be unghosted. Selecting this gadget will instruct SCSI Inquire to create two environment variables, called SCSI_Device and SCSI_Unit, which contain the name of the device and the selected unit number respectively.

Chapter 11

Hardware and Software Compatibility

11.1 Workbench Version

AsimCDFS requires Workbench version 2.0 or higher to run. Earlier versions of Workbench are no longer supported. If you are currently running Workbench 1.3 or lower, you will have to upgrade. Contact your local dealer for more information.

If CD^{32} compatibility is a priority for your CD-ROM drive, you may want to upgrade your system to Workbench version 3.1. Some CD^{32} titles will require this version.

The FishMarket disc, however, needs no specific Workbench version. This means that a CDTV running Workbench 1.3 will be able to read the FishMarket disc (without the AsimCDFS software installed).

11.2 Host Computer Models

AsimCDFS will function with all Amiga models equipped with a suitable SCSI controller. This includes the Amiga 500, 600, 1000, 1200, 2000, 2500, 3000, 3000T, 4000 and 4000T. With separate ATAPI interface software, AsimCDFS can also use IDE controller cards. Additionally, AsimCDFS also works with the CD^{32} and CDTV models.

Accelerated systems are supported and, in most cases, are highly recommended. AsimCDFS has been developed and tested with numerous accelerated systems, including 68020, 68030 and 68040.

11.3 SCSI and IDE Controller Cards

You will require a SCSI controller card to operate AsimCDFS. The controller card must adhere to Commodore's SCSI-Host specifications. This is a standard for communication with controller cards. Earlier controllers, such as the Commodore 2090 and 2090a, do not support this standard.

Each controller card interfaces to the Amiga system through a special program called a device. To successfully install AsimCDFS, you will be required to know the exact name of this device. Usually you will find this information in the documentation for your controller card. Note that device names are case sensitive.

A text file on the *AsimCDFS Install* disk titled **`Controller_Cards`** lists the controller cards that have been tested with AsimCDFS. However, the absence of a particular controller card from this list does not necessarily make it unsuitable for use. Also note that the presence of a particular SCSI controller

in this list does not guarantee its compatibility with every CD-ROM drive.

Alternatively, you can use an ATAPI or IDE CD-ROM drive connected to an IDE controller — for example, our ATAPI CD-ROM driver kit. Consult the documentation for your ATAPI driver for more information.

11.4 CD-ROM Drives

A number of CD-ROM drives are currently supported by AsimCDFS. Care must be taken when selecting a drive for use — features such as access speed, audio features, transfer speed, disc handling, PhotoCD compatibility and SCSI compatibility must all be addressed. A text file on the *AsimCDFS Install* disk titled **`CD-ROM_Drives`** lists the CD-ROM drives that are supported by AsimCDFS.

The most important feature, however, is the compatibility of the CD-ROM drive with your particular controller card — some drives work best with a particular controller and not at all with other controllers. In order to help you make an informed choice, we have done extensive testing with the more popular controller cards and our supported CD-ROM drives. Consult the file **`Drive_Compatibility`** for the results of our testing.

Chapter 12

Compact Disc File Formats

The data on storage media is organized in a specific way. This organization is referred to as a data-layout format or file format. In the CD-ROM world, there exists a number of different formats which are supported by AsimCDFS.

12.1 High Sierra Group

High Sierra was the original CD-ROM format developed for widespread use. Its use has been almost exclusively replaced by its successor, ISO 9660. High Sierra formatted discs are usually found in the IBM world.

12.2 ISO 9660

The ISO 9660 specification is the current international standard for CD-ROM data layout. It is closely associated to the High Sierra format, with a few minor changes throughout. ISO 9660 is a robust format allowing for its use on many diverse platforms.

Some highlights of this format include:

- support for MS-DOS style file names with 8 characters, a period, and three extension characters;
- support for long file names, such as those found on the Amiga platform; and,
- support for file versions via an appended semi-colon.

12.3 Hierarchical File System

Commonly known as HFS, this is the main Apple Macintosh file format used for large capacity devices such as hard drives and CD-ROM drives. A major difference between an Amiga file format and HFS is the method in which files are handled. For the Amiga, a single file name (ie. DH0:s/startup-sequence) will reference one distinct file. With HFS, for each file, there are two separate sections called forks (referred to as Data and Resource forks). In some applications, the relevant data is stored in the Data fork, while others use the Resource fork. Experimentation will determine which fork you need to access. Switching between forks is accomplished via DiscChanger.

When transferring Macintosh files between two computers, it may be necessary to send both the Data and Resource fork. A standard, called MacBinary II, was developed to combine both forks into a single file. AsimCDFS supports the MacBinary II standard.

12.4 PhotoCD

The Eastman Kodak Company introduced to the computer industry a standard for storing images on CD-ROM named PhotoCD. A PhotoCD disc is actually an ISO 9660 disc with a strict directory structure imposed upon it. Of note is:

```
Photo_CD
     OverView.PCD    -> thumbnail file
     Images          -> image directory
          IMG0001.PCD
          IMG0002.PCD
          ....
```

12.5 CD-Digital Audio

Standard audio compact discs are created according to the CD-Digital Audio (CDDA, or Red Book) standard. Most newer CD-ROM drives now have the ability to actually read and transfer this digital audio data over the SCSI bus to the host computer. AsimCDFS supports this exciting feature, basically turning your CD-ROM drive into a 16-bit digital audio CD sampler!

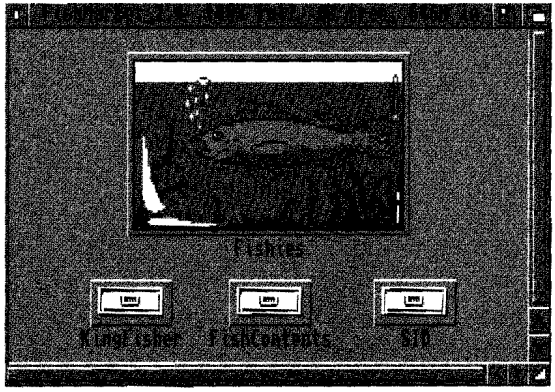
Chapter 13

FishMarket CD-ROM Disc

13.1 Overview of FishMarket

FishMarket is a CD-ROM disc containing the Fred Fish publicly distributable collection from disks #260 through to 1000.

The collection is organized by disk number. We have tried to exactly duplicate Fred Fish's original disk format, thus, the disks are in uncompressed form with proper file names.



FishMarket

In the root directory of FishMarket, four sub-directories exist:

- **Fishies** — containing the actual Fish disks, subdivided into groups of 25;
- **KingFisher** — a Fred Fish catalogue and search program. The use of this program can greatly simplify your search for a particular program or file. Consult the documentation in the KingFisher drawer for more information;
- **SID** — a public domain directory utility allowing direct access to the FishMarket disc with a point-and-click interface; and,
- **FishContents** — containing the individual content files from each of the Fred Fish disks which provide a catalogue and brief description of all the programs found in the collection. Again, these are subdivided into groups of 25.

13.2 Updates

FishMarket will be updated periodically, usually coinciding with major software upgrades. Registered users will automatically be informed of updates.

Chapter 14

Product Support

14.1 Technical Support

At Asimware Innovations, we are committed to providing solid support for our products. If you experience problems with the FishMarket CD-ROM disc, the master floppy disk, or just have questions concerning the operation of AsimCDFS, feel free to contact us.

If you are reporting a problem or erroneous behavior with AsimCDFS, be sure to include your:

- AsimCDFS serial number;
- system configuration, including Amiga model, Workbench version, processor type, listing of SCSI or IDE devices connected and total amount of RAM;
- CD-ROM model and CD-ROM firmware revision, which you can determine via the SCSI Inquire program found on the *AsimCDFS Install* disk;
- SCSI or IDE controller model number and firmware revision; and,
- an exact description of the problem.

The more information you provide, the quicker we can construct a solution.

We can be contacted by the following methods:

- voice at (905)578-4916;
- fax at (905)578-3966;
- BBS at (905)332-9207 by leaving a message to user code ASM; and,
- E-Mail at support@asimware.com.

Note: We will provide technical assistance only to registered users. Our policy will be adhered to under all circumstances. So...don't forget to send in your completed registration card.

14.2 Program Updates

AsimCDFS is not a static program — new features will be added in the future. To ensure you are informed of major upgrades, send in your registration card.

If a circumstance arises whereby we need to issue a *maintenance upgrade* due to a software problem, a nominal charge of $7.00 will be levied to cover postage and handling expenses. Similarly, we periodically release new versions of AsimCDFS which have been upgraded to support additional CD-ROM drive models. This type of upgrade is also handled as a maintenance upgrade.

Alternatively, you can obtain *maintenance upgrades* of AsimCDFS free of charge via either anonymous ftp at ftp.asimware.com or our support BBS, called The Node, at (905)332-9207. This BBS has a USRobotics Courier HST Dual Standard modem capable of connecting from 1200-28.8K bps in most modes.

Note: To gain access to the Asimware Innovations support areas on our BBS, *login as a new user* and leave a message to user code ASM with your name, phone number, address and AsimCDFS serial number. We will provide access to the appropriate areas within 24 hours. Messages left to the sysop will not be forwarded. A message area in which you can leave technical questions or comments is also available.

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